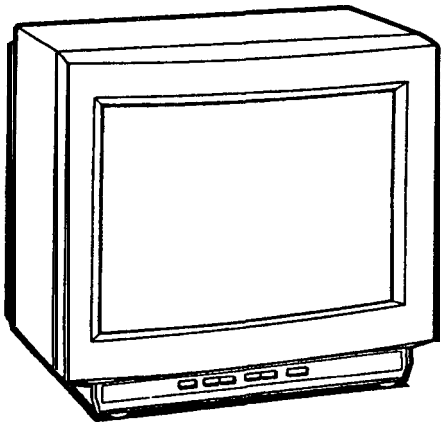
KV-13TR27

RM-781

SERVICE MANUAL



US Model

Chassis No. SCC-D37L-A

Canadian Model

Chassis No. SCC-D36H-A

P-3B CHASSIS

MODELS OF THE SAME SERIES	
KV-13TR24X	
KV-13TR14/13TR24	

SPECIFICATIONS

Television system	**American TV standards**
Channel coverage	**VHF : 2-13**
	UHF : 14-69
	Cable TV : 1-125
Picture tube	Mirror black Trinitron tube
	13-inch picture measured diagonally
	14-inch picture tube measured diagonally
Input	**VIDEO IN (phono jack) : 1Vp-p,**
	75ohms unbalanced, sync negative
	AUDIO IN(phono jack) : 408mVrms
	(100% modulation)
	impedance : 47k ohms
Power requirements	**120V AC, 60Hz**
Power consumption	**97W (Max.)** 3W (STAND **BY)**
Accessories supplied	
	Remote Commander RM-781
	with 2 size AA (R6) batteries
	VHF/UHF telescopic dipole antenna (1)
	Antenna connector (1)
Optional accessories	
	U/V mixer EAC-66
	Connecting cord **VMC-606M/607M,**
	etc.
Speaker size :	7mm X 1

Speaker Impedance	**8Ω**
Speaker Wattage	**Approx. 2W**
Dimensions	**Approx. 356X 331 X 407 mm (w/h/d)**
Weight	**Approx. 10.5kg**

Designs and specifications are subject to change without notice.

MICROFILM

TRINITRON® COLOR TV

SONY®

TABLE OF CONTENTS

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION!!

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE.
LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÈS PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE '*CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAOUE REMPLACEMENT DE COMPOSANTS CRITIQUES. OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

SAFETY CHECK-OUT

(US Model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. **Check the entire** board surface for solder splashes and bridges.
2. Check the **interboard** wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement ,
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the **monopole** antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and' recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, **metal** trim, **"metallized"** knobs, screws, and all other exposed metal parts for AC leakage. **Check** leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 **mA** (500 **microampers).** Leakage current can be measured by any one of three methods.

1. **A** commercial leakage tester, such as the Simpson 229 or RCA **WT-540A.** Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data **Precision** 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. **The** "limit" indication is **0.75 V,** so analog meters must have an accurate **low-**voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC **outlet** boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a **cold-**water pipe with an ohmmeter. The reading should be zero **ohms.** If a cold-water pipe is not accessible, connect a 60-100 **watts** trouble light (not a neon lamp) between the hot side of the receptacle and the **retaining screw.** Try both slots, if necessary, to locate **the** hot **side** of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. **B)**

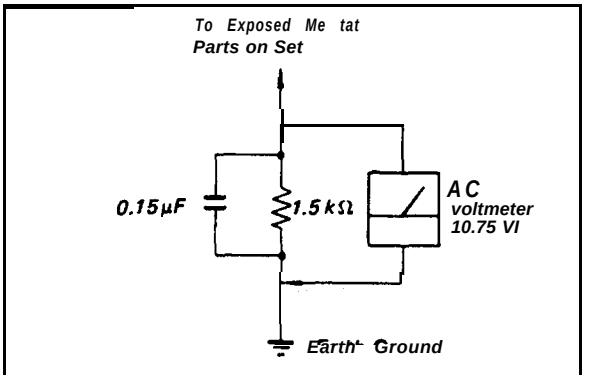


Fig. A. Using an AC voltmeter to check AC leakage.

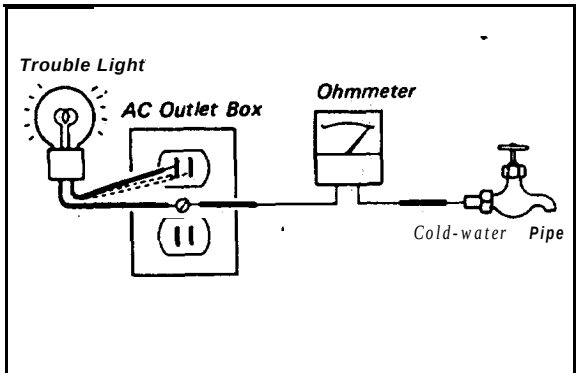


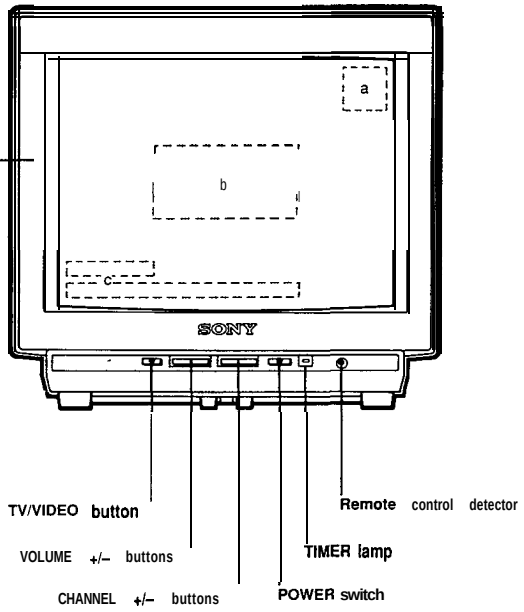
Fig. B. Checking for earth ground.

SECTION 1
GENERAL

I-I. LOCATION OF CONTROLS

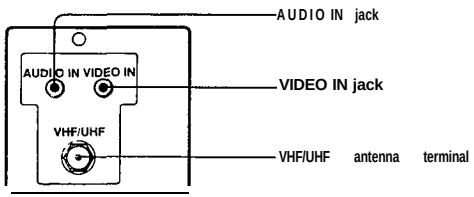
Refer to the page indicated in ( ) for details

Front

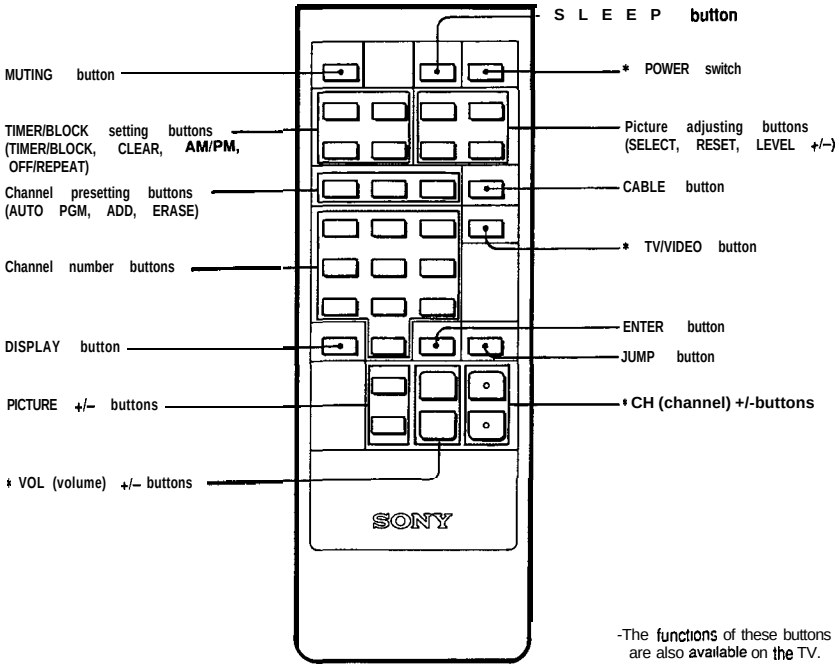


On-screen displays
a) • Channel numbers
. "MUTING" or "SLEEP" indication
. 'VIDEO indication
b) • 'AUTO PROGRAM', 'TIMER or TIMER BLOCK indication
c) • Bar display for volume or picture adjustment
. Current time for Timer/Block

Rear



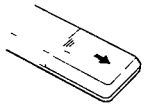
Remote Commander RM-781



-The functions of these buttons are also available on the TV.

Battery installation

1 Open the lid

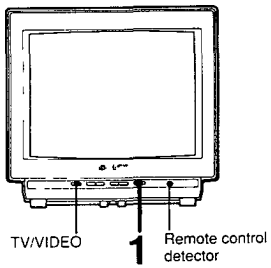


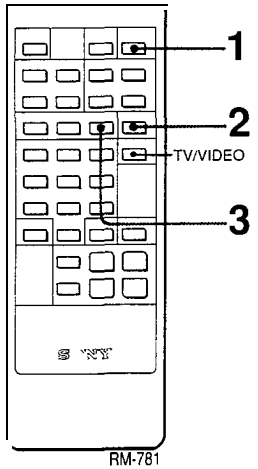
2 Insert two size AA (R6) batteries with correct polarity

. In normal operation, batteries will last up to half a year. If the Commander does not operate properly, the batteries might be exhausted Replace them with new ones.
- To avoid damage from possible battery leakage, remove the batteries when the Commander will not be used for a long time.
- If a Remote Commander that is not recommended is used to operate this TV, or if the supplied Remote Commander is used to operate another TV, the TV may not operate properly

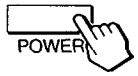
I-2. PRESETTING TV CHANNELS

To Preset All Receivable Channels Automatically

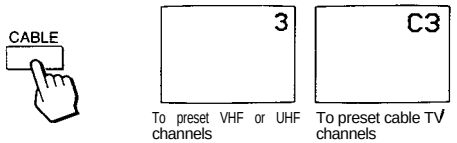




1 Press POWER on the TV or the Remote Commander to turn the N on.



2 Press CABLE so that the appropriate mode appears.



3 Press AUTO PGM.

"AUTO PROGRAM is displayed on the screen and receivable channels (other than the channels already preset) will be preset i" numerical sequence The channels previously preset reman i" the unit's memory
When no more channels can be found the programming stops anc the lowest numbered channel is displayed

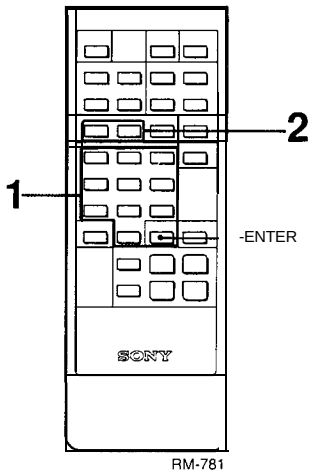
Receivable channels of this TV are:
VHF 2-13
UHF 14 69
Cable 1 125

To add the channels that could not be preset with automatic programming because their signal strength was too weak or to erase unnecessary channels, follow the steps in To preset only the desired channels on the next Page

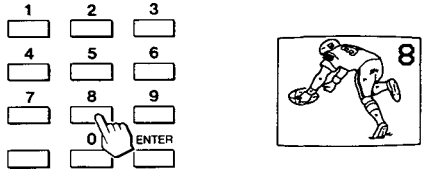
To check Preset channels
Press CH +/-

If the "VIDEO" indication is displayed on the screen
Press the TV/VIDEO button on the TV or the Remote Commander so that a channel "umber appears

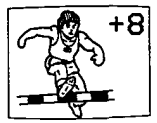
To Preset Only the Desired Channel or to Erase Unnecessary Channels



1 Press the channel number button(s) and then ENTER to select the channel to be added or erased.



2 To add channels - Press ADD.



A '+ appears for a moment
This channel has now bee" added to the channel scan memory

To erase channels - Press ERASE.

A - appears for a moment
This channel has now bee" erased from the channel scan memory
The next time the CH +/- button is pressed this channel will be skipped

Repeat steps 1 and 2 for other channels to be added or erased

When a VHF or UHF channel is erased
The cable TV channel with the same number is also erased and vice versa

Cable TV channel chart'
Cable TV systems use letters or numbers to designate channels To tune in a channel refer to the chart below

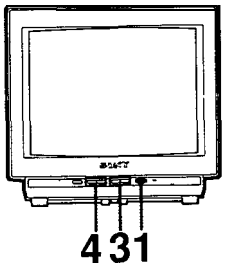
Number on this TV	1	5	6	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Corresponding CAT" channel	A 8	A-7	A-6	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	31	32	33	34	35	36	37	38	39	.....	$3	94	95	96	97	98	99	100	101	102	....	123	124	125
	R	S	T	U	V	W	W+1	W+2	W+3	.. ..	W-57	W-58	A 5	A 4	A 3	A 2	A 1	W-59	W-60	W-6	W-82	W-83	W-84

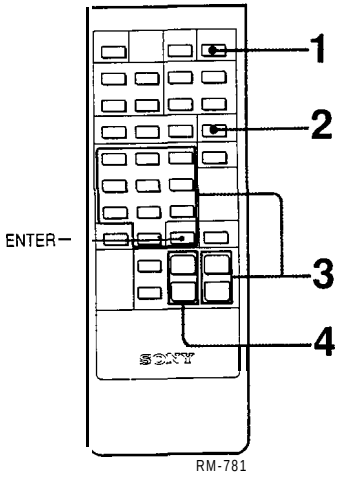
Check with your local cable TV company for more complete information on the available channels

. The designation of the cable TV channels conforms to the EIA/NCTA recommendation

Note
Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection

I-3. WATCHING TV PROGRAMS





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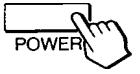
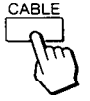
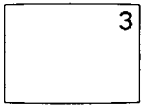
1 Press POWER on the N or the Remote Commander to turn the N on.



2 Press CABLE so that the appropriate mode appears.



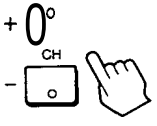


To view VHF or UHF channels

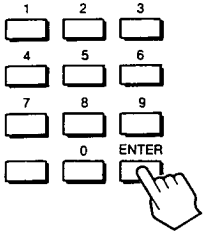
To view cable TV channels

3 Select a channel in one of the following two ways:

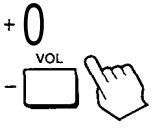
To scan the preset channels in numerical sequence, press CH +/–



To select a channel directly, press the channel number button(s) and then ENTER
For example, to select channel 10, press 1 0 and ENTER

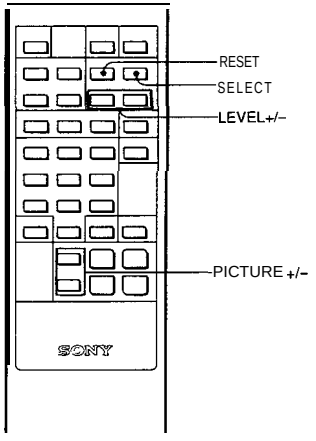


4 Press VOL + or – to adjust the volume.



Note
To turn off the N
Press POWER on the TV or the Remote Commander again

14. ADJUSTING THE PICTURE



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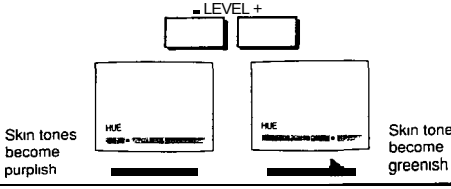
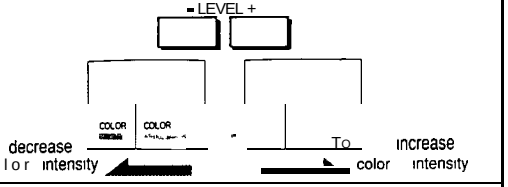
Press SELECT repeatedly until the on-screen display of the item to be adjusted appears. then press LEVEL +/-

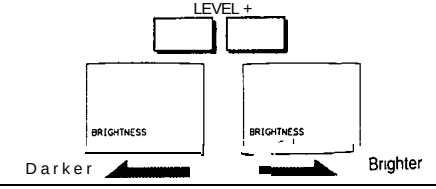
HUE



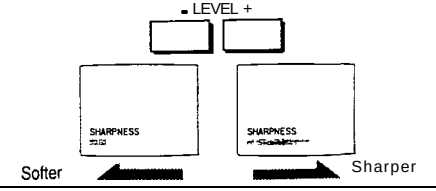
COLOR



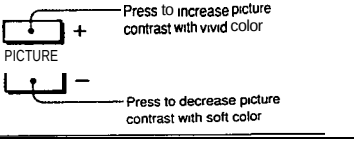
BRIGHT (brightness)



SHARP (sharpness)

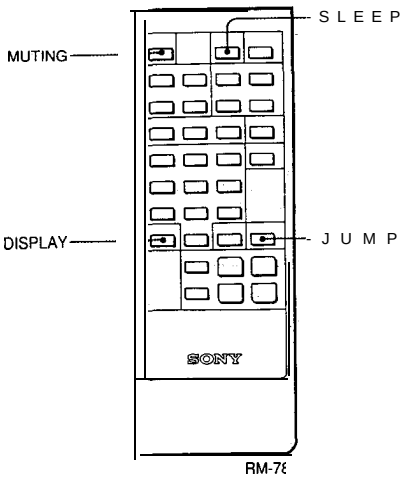


To **adjust picture contrast**



To clear the adjustment levels and restore the factory preset levels at once press **RESET.**

I-5. ENJOYING THE CONVENIENT FEATURES



Muting the sound

Press MUTING.
The "MUTING" indication will appear on the screen.
To restore the sound. press MUTING again or VOL +

Keeping the channel displayed

Press DISPLAY.
To make the channel display disappear, press DISPLAY again.

Using the SLEEP timer

Press SLEEP
The TV will be turned off automatically after about one hour. The green "SLEEP ON" indication will appear on the screen for a few seconds when SLEEP IS pressed and the red "SLEEP" indication will appear one minute before the TV is turned off.
To cancel the SLEEP timer, press SLEEP again, or turn off the TV. The "SLEEP OFF" indication will appear when SLEEP is pressed again.

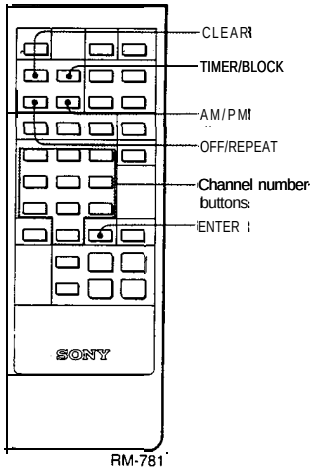
Switching quickly between two channels

Press JUMP
Each time JUMP IS pressed. the channel which appeared on the screen directly before IS recalled. This button enables you to keep track of two programs alternately.

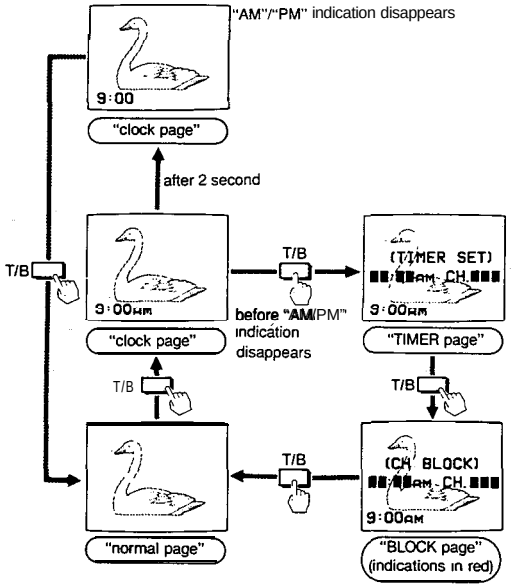
I-6. TIMER/BLOCK

Internal clock	Once the internal clock IS set. the current time will appear on the screen. It IS necessary to set the clock correctly to activate the program start TIMER and channel BLOCK.
Program start **TIMER**	Makes a program of your choice appear on the screen automatically at the desired time.
Channel BLOCK	Blocks a channel from appearing on the screen for 12 hours. Use channel BLOCK to prevent children from watching undesirable programs.

The buttons used for the above functions are located on the Remote Commander.



To set the internal clock, program start TIMER and channel **BLOCK,** you must summon the corresponding "pages". "clock page." "TIMER page" and "BLOCK page."
To change the "pages". press TIMEWBLOCK.
T/B stands for the TIMEWBLOCK button.

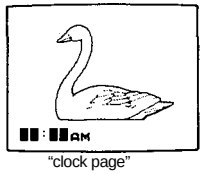


- All settings will be erased from the unit's memory if the unit IS unplugged. or if a power failure occurs.
- The TIMER and BLOCK will operate only if the clock is set correctly.
- If the TIMER and BLOCK are set for overlapping times on the same channel. the blocked channel wilt appear on the screen at the time set on the TIMER.

How to Set the Internal Clock

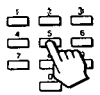
Example: To set **the clock to 8:05 PM**

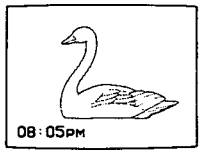
1 Press TIMER/BLOCK once to change from "normal page" to "clock page."



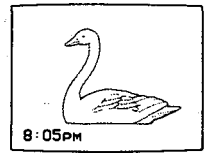
"clock page"

2 Press 0, 8, 0, 5 AM/PM (0 necessary).





3 If you have performed the operation correctly, press ENTER.
The numbers will "wink" to indicate that the clock has been set. (The 0 in front will disappear.)



If you have made a **mistake,** press CLEAR and return to step 2.
The "AM/PM" indication will disappear after 2 seconds.

To summon "TIMER **page,"** press TIMER/BLOCK before the "AM"/"PM" indication disappears.

To **return to "normal page,"** press TIMER/BLOCK after the "AM"/"PM" indication has disappeared.

To reset the clock, summon "clock page" and Press CLEAR before the "AM"/"PM" indication disappears. Then follow the steps above from step 2.

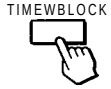
12:00 AM stands for midnight.
12:00 PM stands for noon.

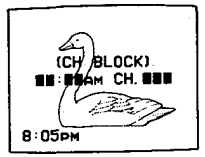
How to Set the Channel BLOCK

Make **sure** that the clock has been set correctly before Setting the channel BLOCK.

Example: To set the BLOCK for a **program** which begins at **9:30 AM** on channel 9

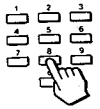
1 Press TIMER/BLOCK three times to change from "normal page" to "BLOCK page."

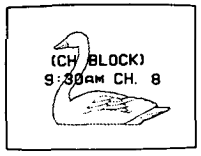




"BLOCK page" (indications in red)

2 Press 0, 9, 3, 0, ENTER (0 necessary).
Numbers will "wink" to indicate that the time has been Set.
Press 8, ENTER (0 not necessary). Numbers will "wink" to indicate that the channel has been Set.





The BLOCK has now been set.

If you have made a mistake, press CLEAR and return to step 2.

At the preset time, the picture of the selected channel will be blocked from view and the sound will be muted.
A red "BLOCKED' indication will appear on the screen while the channel is blocked.
Normal reception will be resumed after 12 hours.

To return to normal reception white the channel is blocked, recall "BLOCK page" and press CLEAR.

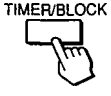
The BLOCK setting blocks a specified channel for the same 12-hour period everyday.

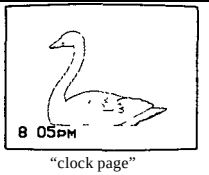
To clear BLOCK setting. summon "BLOCK page" and press CLEAR.
To reset, clear the setting and follow the steps above from step 2.

Make sure that the clock has been set correctly **before** setting the program start **TIMER.**

Example: To set the TIMER for a program **which** begins at **10:30** PM on channel 12

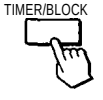
1 Press TIMER/BLOCK once to change from "normal page" to "clock page."

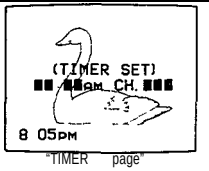




"clock page"

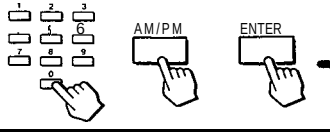
2 Press TIMER/BLOCK before the "AM"/"PM" indication disappears and summon "TIMER page "

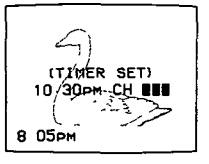




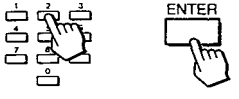
"TIMER page"

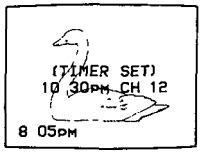
3 Press 1.0.3.0, AM/PM, ENTER
Numbers will "wink" to indicate that the time has been set





4 Press 1, 2, ENTER (0 not necessary)
Numbers will "wink" to indicate that the channel has been set





The TIMER lamp will light up to indicate that the TIMER has been set

If you have made a mistake, press CLEAR and return to step 3

A, the preset time, the selected channel will appear on the screen and the TIMER lamp will go out The TIMER will operate whether you are watching a TV Program or a VCR playback. or even if you have turned off the TV

If no button is pressed within 2 hours after the preset time, an 'OFF indication will appear on the screen for 1 minute If a button is still no, touched during the 1minute, the TV will turn off automatically as a safety precaution

me TIMER operates only once, but the time and the channel will remain in the unit's memory

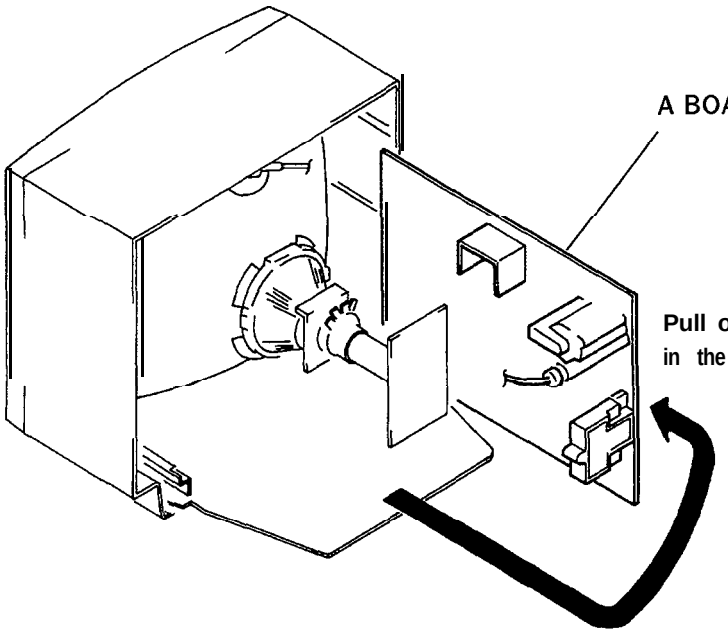
If you want to preset the same channel at the same time for a future date, press OFF/REPEAT The TIMER lamp will light up to indicate that the TIMER has been reactivated

If you want to deactivate the TIMER, press OFF/REPEAT again so that the TIMER lamp goes out It is no, necessary to summon -TIMER page" to use the OFF/REPEAT button Furthermore, this button is effective even if the TV has been turned off

To clear the TIMER setting. summon "TIMER page" and press CLEAR
To reset, clear the setting and follow the steps from step 3

SECTION 2
DISASSEMBLY

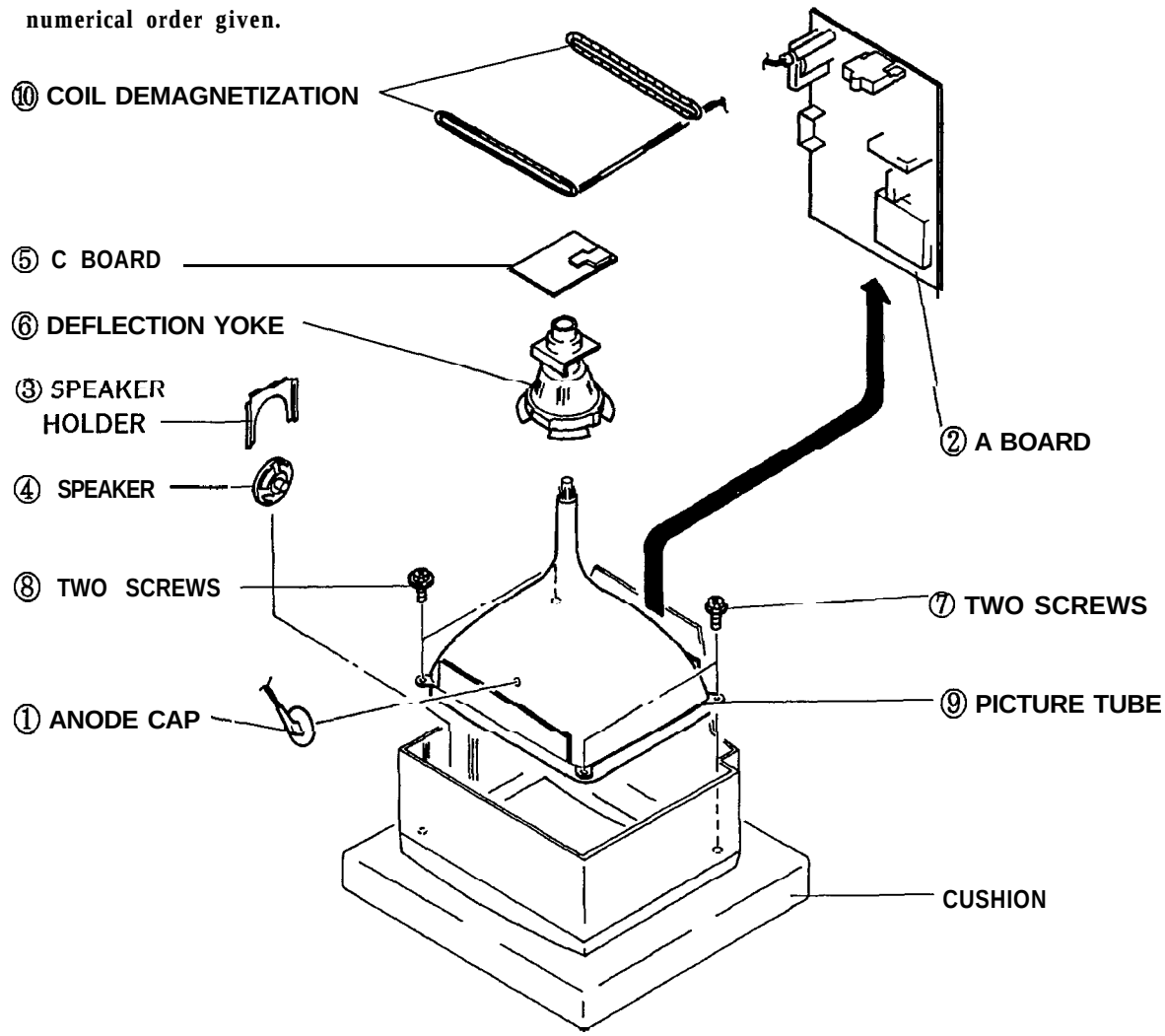
2-I. SERVICE POSITION



Pull out and turn up the A board in the direction shown by the arrow.

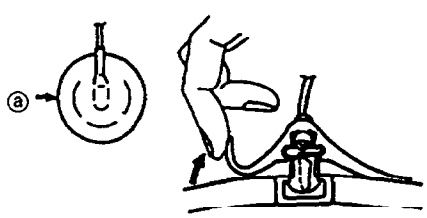
2-2. PICTURE TUBE REMOVAL

Note : Follow the disassembly procedure in the numerical order given.

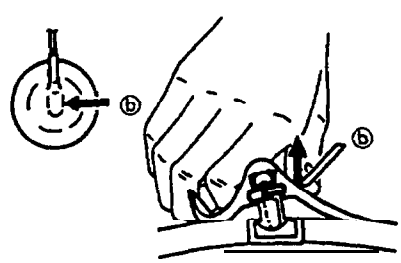


. REMOVAL OF ANODE-CAP

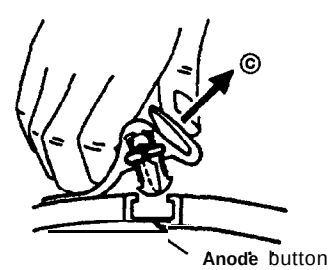
▪ REMOVING PROCEDURES



@Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



@Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.



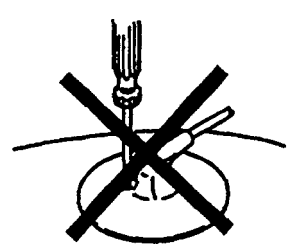
@When one side of the rubber cap is separated from the anode button, the snode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

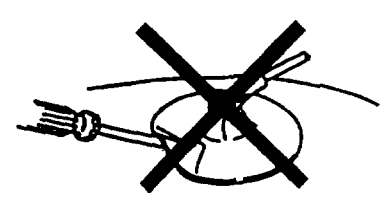
▪ HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material!

② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.





SECTION 3
SET-UP ADJUSTMENTS

- The following abjustments should be made when a complete realignment is required or a new picture tube is installed.
- These abjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switch should be set as follows unless otherwise noted :

PICTURE control ..... MAXIMUM
BRIGHTNESS control ..... MAXIMUM

Perform the adjustments in order as follows :

1. Beam Landing
2. Convergence
3. Focus
4. Sub Brightness
5. White Balance

Note : Test Equipment Repuired.

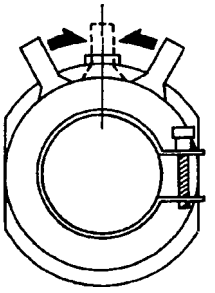
1. Color-bar/Pattern Generator
2. Degausser

3-1. BEAM LANDING

Preparation.

- Feed in the white pattern.
- Before starting, degauss the entire screen.

1. Loosen deflection yoke screw.
2. Adjust purity control as shown in Fig.3-1.
3. Slide deflection yoke as far forward as it will go.
4. Turn the raster signal of the pattern generator to red.
5. Adjust purity control to center vertical red band as shown in Fig.3-2.
6. Slide deflection yoke back for a uniform red screen.
7. Check green and blue rasters for uniformity by performing the same way as steps 4, 5 and 6.
8. Tighten the deflection yoke screw.
9. Check if mislanding appears at corners a-d as shown in Fig. 3-3. If mislandig is observed, correct it as shown in Fig. 3-3.
10. Confirm that beam landing is correct when the receiver is faced in all directions.



PURITY CONTROL
Fig. 3-I.

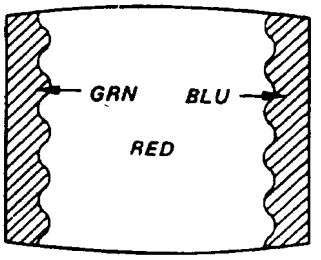
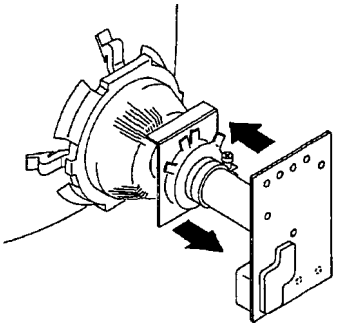


Fig. 3-2.



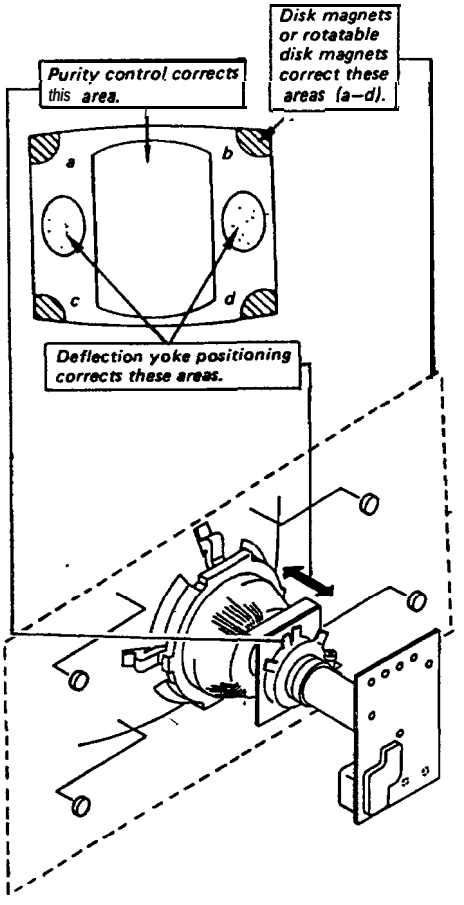


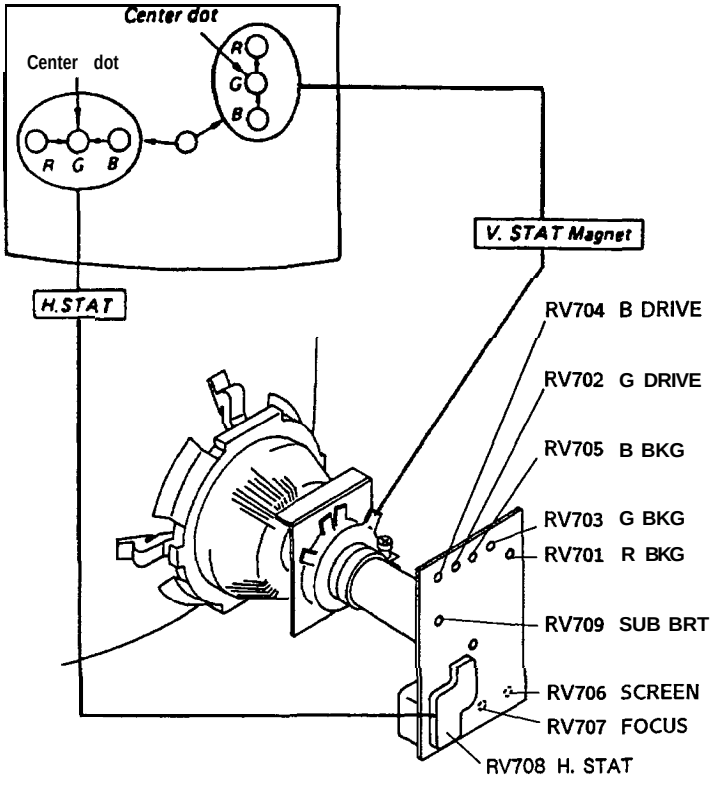
Fig. 3-3.

3-2. CONVERGENCE

Preparation :

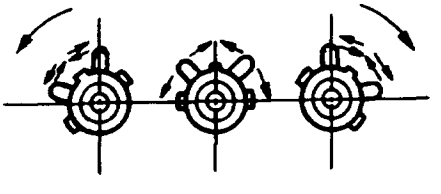
- Before starting, perform FOCUS, H. SIZE and V. SIZE adjustments.
- Set BRIGHTNESS control to fully counterclock - wise.
- Feed in the dot pattern.

(1) Horizontal and Vertical Static Convergence

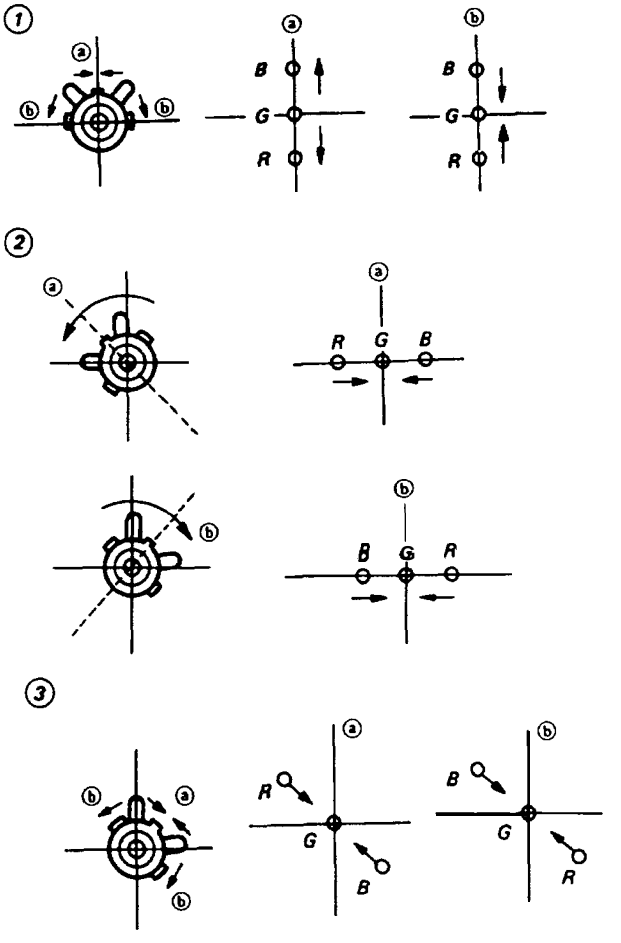


1. Adjust H. STAT VR to coincide red, green and blue dots on the center of screen. (Horizontal movement)
2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen. (Vertical movement)
3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below. (In this case, H. STAT VR and V. STAT magnet effect each other.)

- Tilt the V.STAT magnet and adjust static convergence to open or close the V. STAT magnet.



4. When the V.STAT magnet is moved in the direction of arrow ⓐ and ⓑ , Red, Green and Blue dots move as shown below.

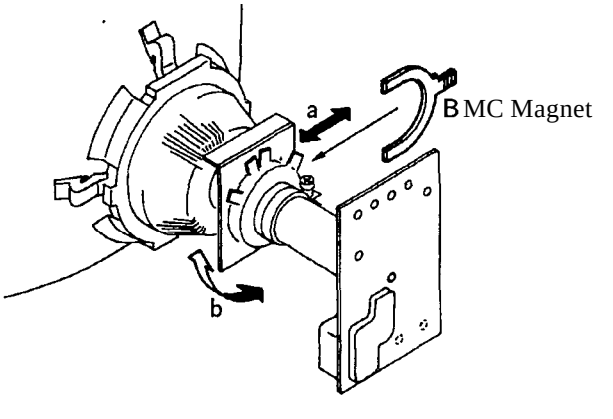


If blue dot dose not coincide with red and green dots, perform following steps.

Move BMC magnet (a) to correct insufficient H. static convergence.

Rotate BMC magnet (b) to correct insufficient V. static convergence.

In either case, repeat Beam Landing Adjustment.

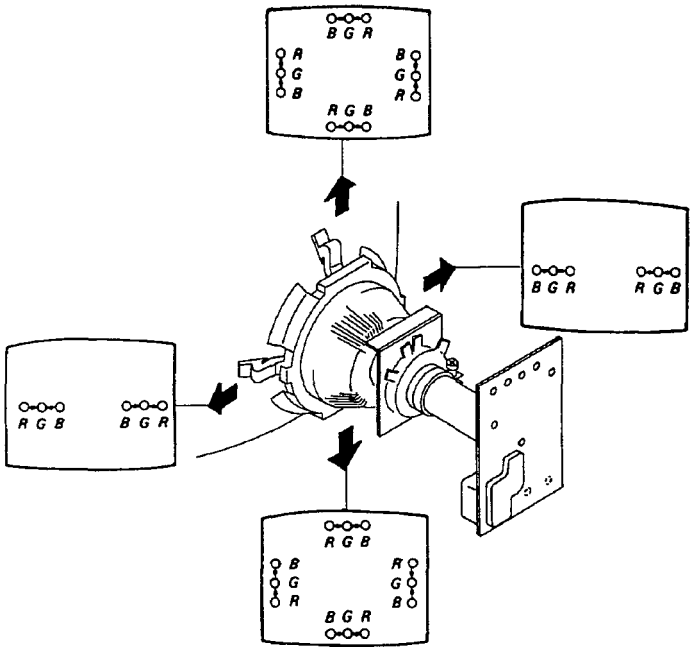


(2) Dynamic Convergence Adjustment

Preparation :

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown below.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.



3-3. FOCUS (G4)(RV707)

Adjust FOCUS control for a best picture.

3-4. SUB BRT (RV709)

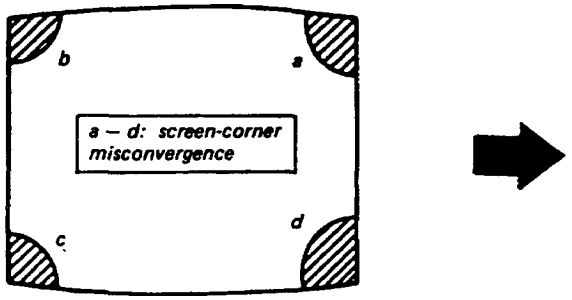
1. Feed in a cross-hatch pattern.
2. Set PICTURE and BRIGHTNESS to minimum.
3. Turn RV709 (SUB BRT) slowly to obtain a faintly visible cross-hatch.

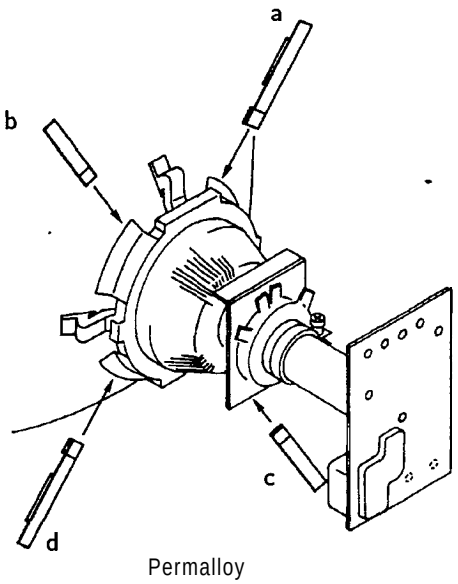
3-5. WHITE BALANCE

Feed in the cross-hatch pattern.

1. Set BRIGHTNESS and PICTURE controls to miniium.
2. Turn RV704 (B.DRIVE) and RV702 (G. DRIVE) fully counterclockwise.
3. Set RV701 (R.BKG), RV703 (G.BKG), RV 705 (B.BKG) and RV709 (SUB BRT) to mechanical center.
4. Turn RV706(SCREEN) slowly to obtain a faintly visible cross-hatch. Note the color that first becomes visible by turning RV708. Do not turn a BKG control for this color.
5. Adjust the other two BKG controls for best white balance (neutral gray) of the faint cross-hatch.
6. Set BRIGHTNESS and PICTURE controls to maximum. Observe the screen and adjust the DRIVE controls for best white balance.
7. Repeat Steps 1 through 6 several times.

(3) Screen-corner Convergence





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SECTION 4
SAFETY RELATED ADJUSTMENT

⧓ R568 CONFIRMATION METHOD (HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

When replacing the following components (marked with ◪ on the schematic diagram) , always perform the adjustment as follows :

IC301, D502, C514, C517, C518, C525, **C530, C561,** R512, R521, R522, R555, **R556, R567, R568,** T503, DY

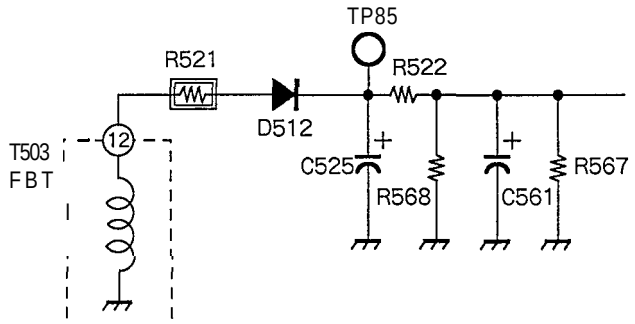
(1) Preparation before confirmation

1. Turn the POWER switch ON, and receive entirely dot signals and set the PICTURE and BRIGHTNESS controls to minimum.
2. Confirm that voltage of T85 is more than 25.0± 2.5V DC when set is operating normally with 120 V AC supply.

(2) Hold-down operation confirmation

1. Turn the POWER switch ON, and receive entirely dot signals and set the PICTURE and BRIGHTNESS controls to minimum.
2. Apply DC voltage to the check terminal of TP85 via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than *30.7V whereby the raster disappears during of hold-down circuit.

NOTE : when the hold-down circuit starts operating, switch OFF the POWER of the set immediately.



(3) Hold-down readjustment

When step(2) is not satisfied, readjustment should be performed by altering the resistance value of R 568 (a component marked with 6).

(4) Confirmation of hold-down errorneous operation

1. Turn the POWER switch ON, and receive dot signals and set the PICTURE and BRIGHTNESS controls to minimum.
2. Confirm that the hold-down circuit does not operate by turning the POWER switch ON and OFF repeatedly several times.

NOTE : If the hold-down circuit starts operating in the above case, switch OFF the POWER of the set immediately.

3. Turn the POWER switch ON, and receive dot signals and entirely white signals, and set the PICTURE and BRIGHTNESS controls to maximum.

4. Confirm that the hold-down circuit does not operate by performing switchover of the channels of the dot signals and entirely white signals several times.

NOTE : If the hold-down circuit starts operating in the above case, switch OFF the POWER of the set immediately.

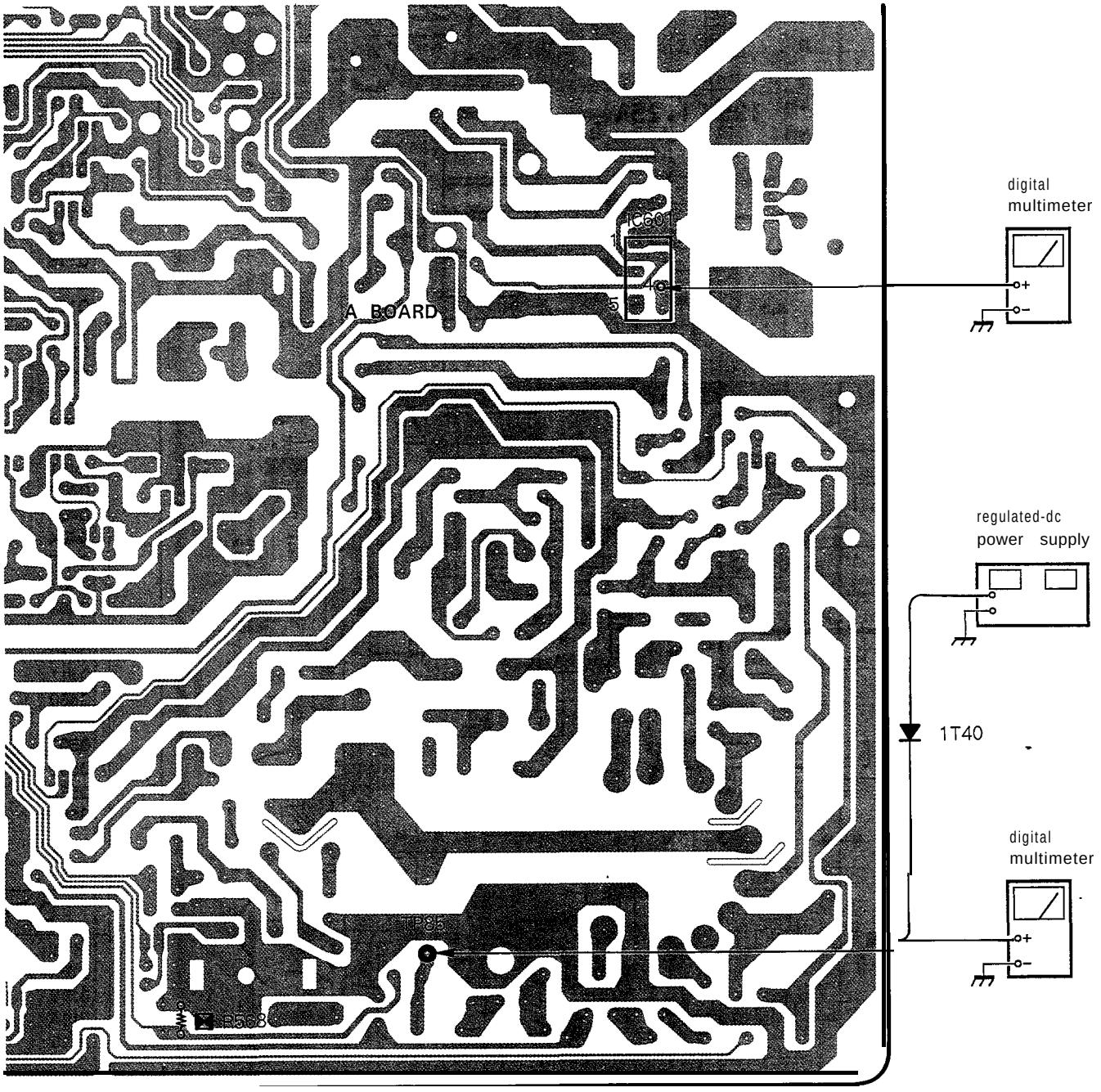
5. If the above-mentioned steps 1 to 4 are not satisfied reconfirm steps (2) to (4) by altering the R568 smaller resistance value (a component marked with ⊠).

*Use a digital multimeter who& input impedance is over 100MΩ when confirming the voltage of TP85.

B+ VOLTAGE CONFIRMATION

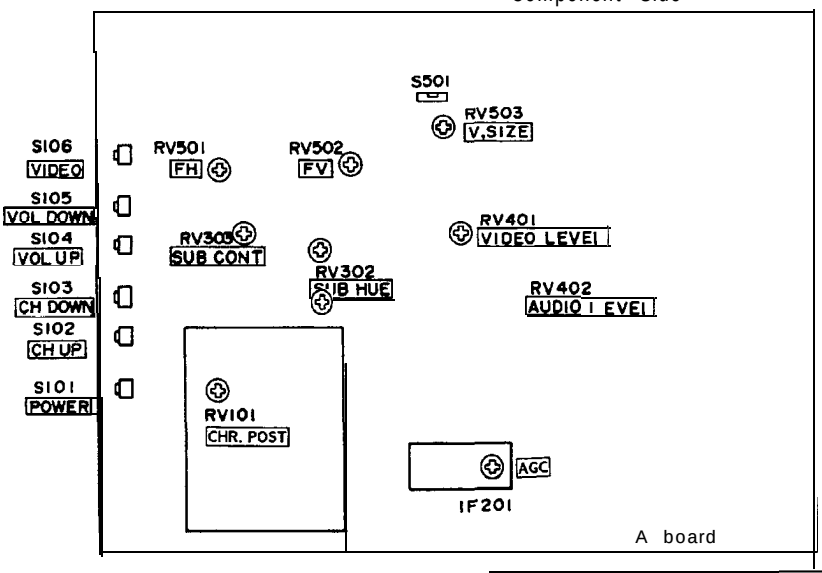
The following adjustments should always be performed when replacing IC601.

1. Supply 130^{+2}_{0} V AC to with variable auto-transformer.
2. Receive Monoscope signals.
3. Set the PICTURE and BRIGHTNESS controls in to Initial Reset.
4. Confirm the voltage of pin ④ of IC601 is less than 137.20V DC.
5. If step 4 is not satisfied, replace IC601 and repeat above steps.



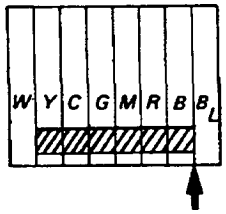
SECTION 5
ELECTRICAL ADJUSTMENTS

5-I. A BOARD ASDJUSTMENT



BAR POSITION ADJUSTMENT (RV101)

1. Receive a color-bar signal.
2. Set the PICTURE button to maximum.
3. Adjust RV101 to the point where the arrow indicate.

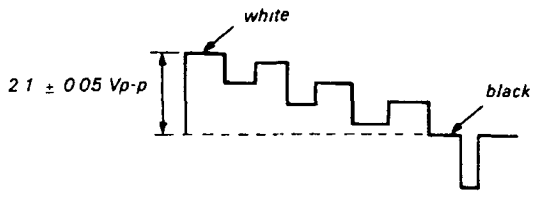


RF AGC ADJUSTMENT (IF201)

1. Recive an off-air signal.
2. Adjust AGC VR (AGC VR of IF201) so that snow noise and cross-modulation just disappear from the picture.

SUB CONTRAST ADJUSTMENT (RV303)

1. Receive a color-bar signal.
   PICTURE ..... MAX
   BRT ..... CENTER
   COLOR ..... MIN
2. Connect circuit between Base of Q354 and 9.3V line with a jumper wire.
3. Draw A-8 - C-3 connector (C Board).
4. Connect an oscilloscope to the pin ④ of A-8 connector (blue out).
5. Adjust RV303 (SUB CONT) so that voltage is 2.1 ± 0.05Vp-p.

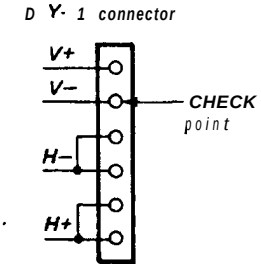


H.FREQ ADJUSTMENT (RV501)

1. Receive an off-air signal.
2. Connect circuit between pin ㊽ of IC301 (H IN) and pin ㊱ of IC301 (VCC2) with a jumper wire.
3. Connect the frequency counter across Base of Q 550 and ground.
4. Adjust RV501 for 15,734kHz±50Hz on the frequency counter.
5. Disconnect a jumper wire from IC301.

V.FREQ ADJUSTMENT (RV502)

1. Receive an off-air signal.
2. Connect circuit between pin ㊼ of IC301 (V IN) and pin ㊱ of IC301 (VCC2) with a jumper wire.
3. Connect the fre uency counter across DY-1 connector (V.DY) and ground.
4. Adjust RV502 for 55.0±0.3Hz on the frequency counter.
5. Disconnect a jumper wire from IC301.



H.CENT ADJUSTMENT (A-13)

1. Recive a cross-hatch signal.
2. Set PICTURE and BRT to normal.
3. Adjust H.CENT (H.CENT TAP=A-13) for best picture.

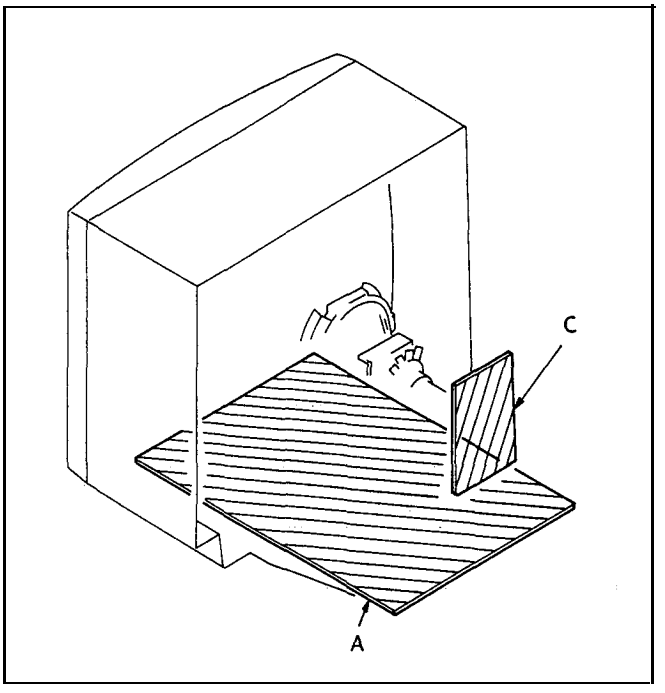
I -

1. Receive a cross-hatch signal.
2. Set PICTURE and BRT to normal.
3. Adjust V.CENT (S501) for best picture.

MEMO

SECTION 6
DIAGRAMS

6-1. CIRCUIT BOARD LOCATION



Note :

- All capacitors are in μ F unless otherwise noted. pF : μ μ F 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms.
- △ : internal component.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation, adjustment for repair.
- Indication of resistance, which dose not have one for rating electrical power, is as follows.

Pitch : 5mm
Rating electrical power : ¼W

- All variable end adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ❑ in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be reauired, replace only with the value originally used.
- When replacing components identified by ❑ , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ❑ and repeat the adjustment until the specified value is achieved.(Refer to R381 adjustment on Page 15, 16.)
- When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (◪)	Adjustment (⊠)
C514, C517, C518, C525, C530, C561, D502, IC301, R512, R521, R522, R555, R556, R567, R568, T503 (FBT), DY	R568 (HOLD DOWN)

- Voltages are dc with respect to ground unless otherwise noted.
- All voltages are in V.
- Reading are taken with a color-bar signal input.
- Reading are taken with a NTSC 358 color-bar signal input
- Voltage variations may be noted due to normal production tolerances
- : B+ bus.
- : B- bus
- signal path.
- Voltage *in* audio *circuit are* measured receving the FM broadcast.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE WIREWOUND
	: RB	NONFLAMMABLE CEMENT
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifies par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer aue par des pièces de numéro spécifié.

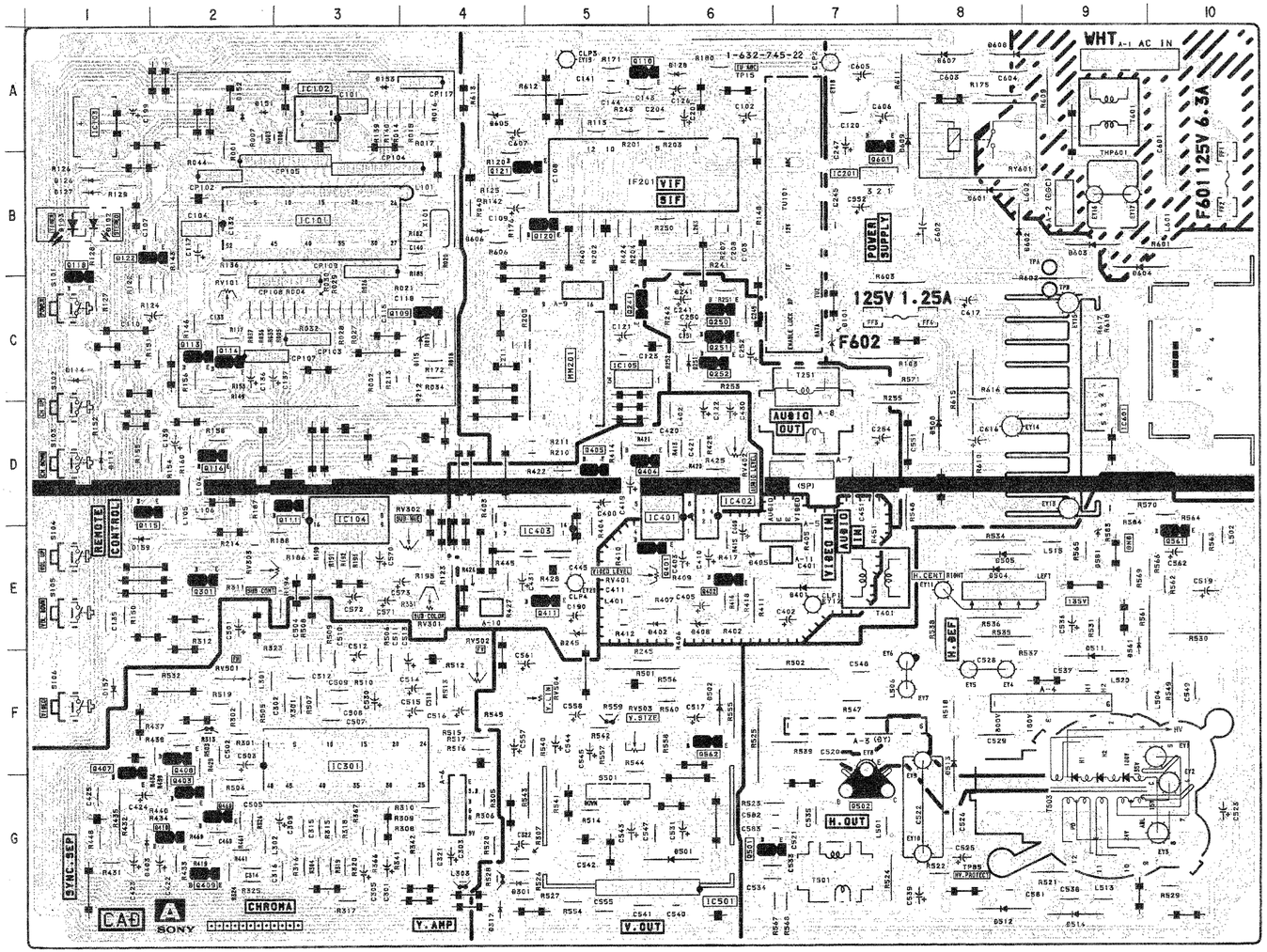
KV-13TR27
RM-781

KV-13TR27
RM-781

A [TUNER, VIF, SIF, PLL CONTROLLER, MEMORY, COMB FILTER, Y. CHROMA JUNGL, D/A CONVERTER, H/V OUT. HV PROTECT, POWER SUPPLY, CUSTOMER CONTROL] **C** [R. G. B OUT]

6-2. PRINTED WIRING BOARD

–A Board–



IC

IC101	B-3
IC102	A-3
IC103	A-1
IC104	D-3
IC105	C-5
IC201	B-7
IC301	F-3
IC401	D-6
IC402	D-6
IC403	E-5
IC501	G-6
IC601	D-9

TRANSISTOR

Q109	C-4
Q110	A-5
Q111	D-3
Q113	C-2
Q114	C-2
Q115	D-1
Q116	D-2
Q118	B-1
Q120	B-5
Q121	B-4
Q122	B-1
Q241	C-5
Q250	C-6
Q251	C-6
Q252	C-6
Q301	E-2
Q401	E-6
Q402	E-6
Q403	G-2
Q404	D-5
Q405	D-5
Q407	F-1
Q408	F-2
Q409	G-2
Q410	G-2
Q411	E-5
Q460	G-2
Q501	G-6
Q502	G-7
Q561	E-10
Q562	F-6
Q601	A-7

DIODE

D101	C-7
D103	B-1
D113	D-1
D114	C-1
D115	C-4
D126	B-1
D127	B-1
D128	A-6
D157	F-1
D159	E-1
D241	C-6
D245	E-5
D251	C-6
D301	G-4
D317	G-4
D401	E-7
D402	E-6
D403	G-1
D405	E-6
D408	E-6
D501	G-5
D502	F-6
D504	E-8
D505	E-8
D508	D-8
D511	F-9
D512	G-8
D513	F-8
D514	G-9
D561	E-9
D601	B-8
D602	B-8
D603	B-9
D604	B-9
D605	A-4
D606	B-4
D607	A-8
D608	A-8
D609	A-8

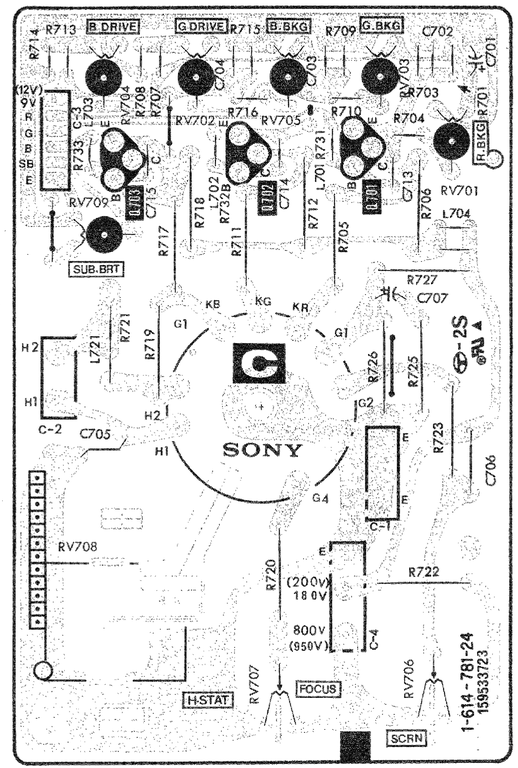
VARIABLE RESISTOR

RV101	C-2
RV302	E-4
RV303	E-2
RV401	E-6
RV402	D-6
RV501	F-2
RV502	F-4
RV503	F-5

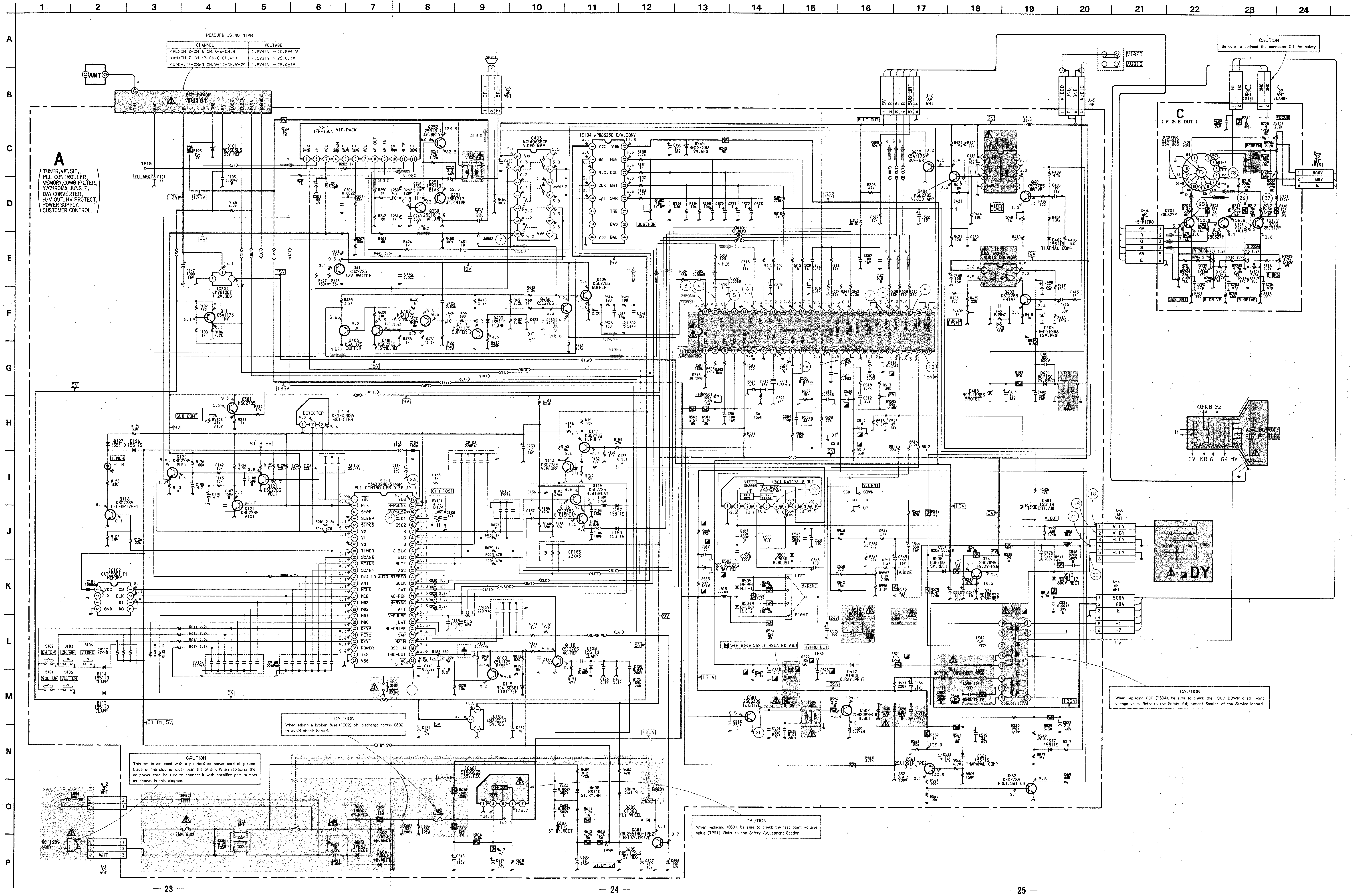
TP

TP15	A-6
TP85	G-8

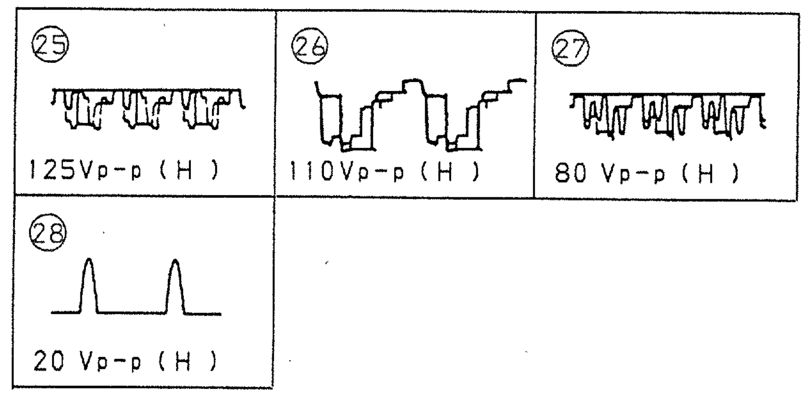
–C Board–



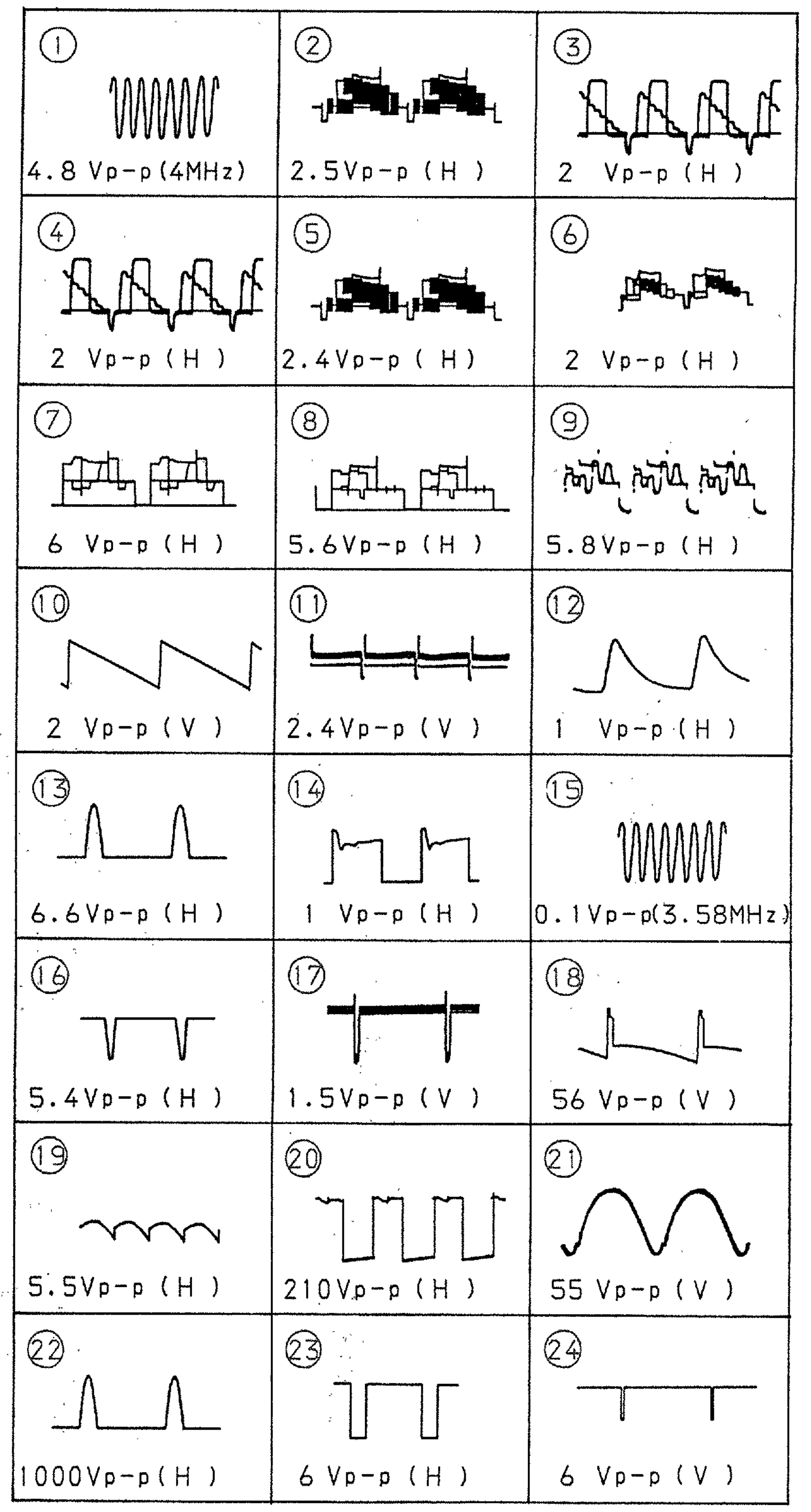
6-3. SCHEMATIC DIAGRAM



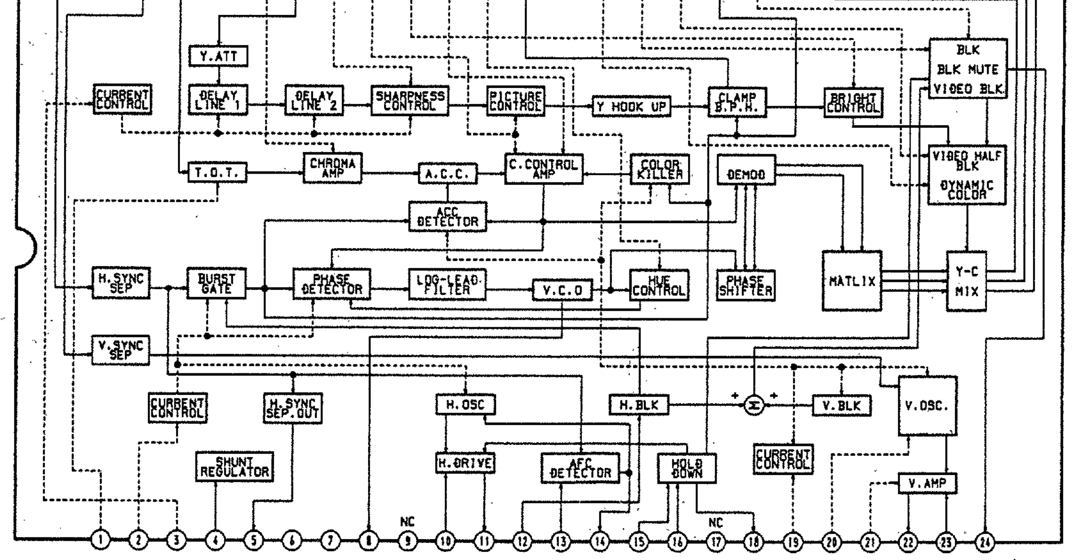
• C BOARD WAVEFORMS



• A BOARD WAVEFORMS

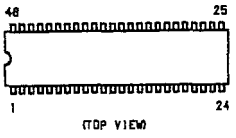


CXA1013AS



6-4. SEMICONDUCTORS

AN5512
KA2131

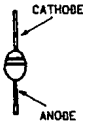


M34302M8-514SP

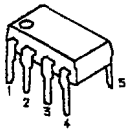
2SC3209LK

RD1 OES-B2
RD12ES-B3
RD33ES-L3
RD4.3ES-B1
RD5.1 ES-L2
RD5.6ES-B2
RD9.1 ES-B3
WG713A
1SS119

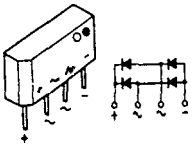
U05G
V19CS



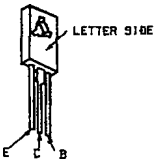
CAT59C11HP
QCPL-3209

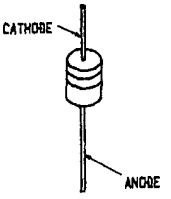


PC81 7-B



2SC3271-P





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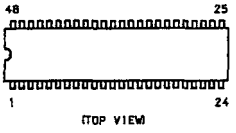
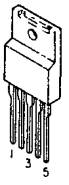
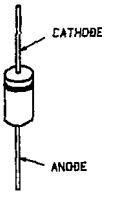


STR-D3035

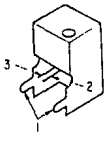


2SC3311A-QRS

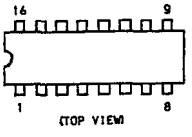
RGP02-17



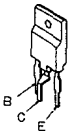
KEY-COOSV-F



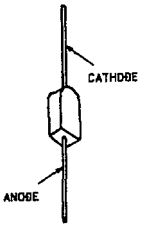
μ PD6325C



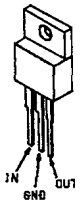
2SD2089-LBSONY



RM11C



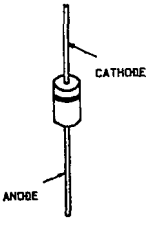
LM7805CT
LM7812CT
M5F78M05L



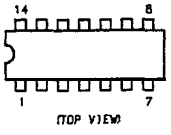
2SA1091-O
2SB1212-P
2SC2551 RO
2SD1812-P
2SD1812-Q

2SD2096-EF

RU-3AM

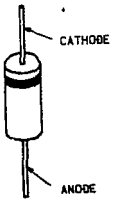


MC14066BCP



2SA1175-HFE
2SC2785-HFE

TVR4J



SECTION 7
EXPLODED VIEW

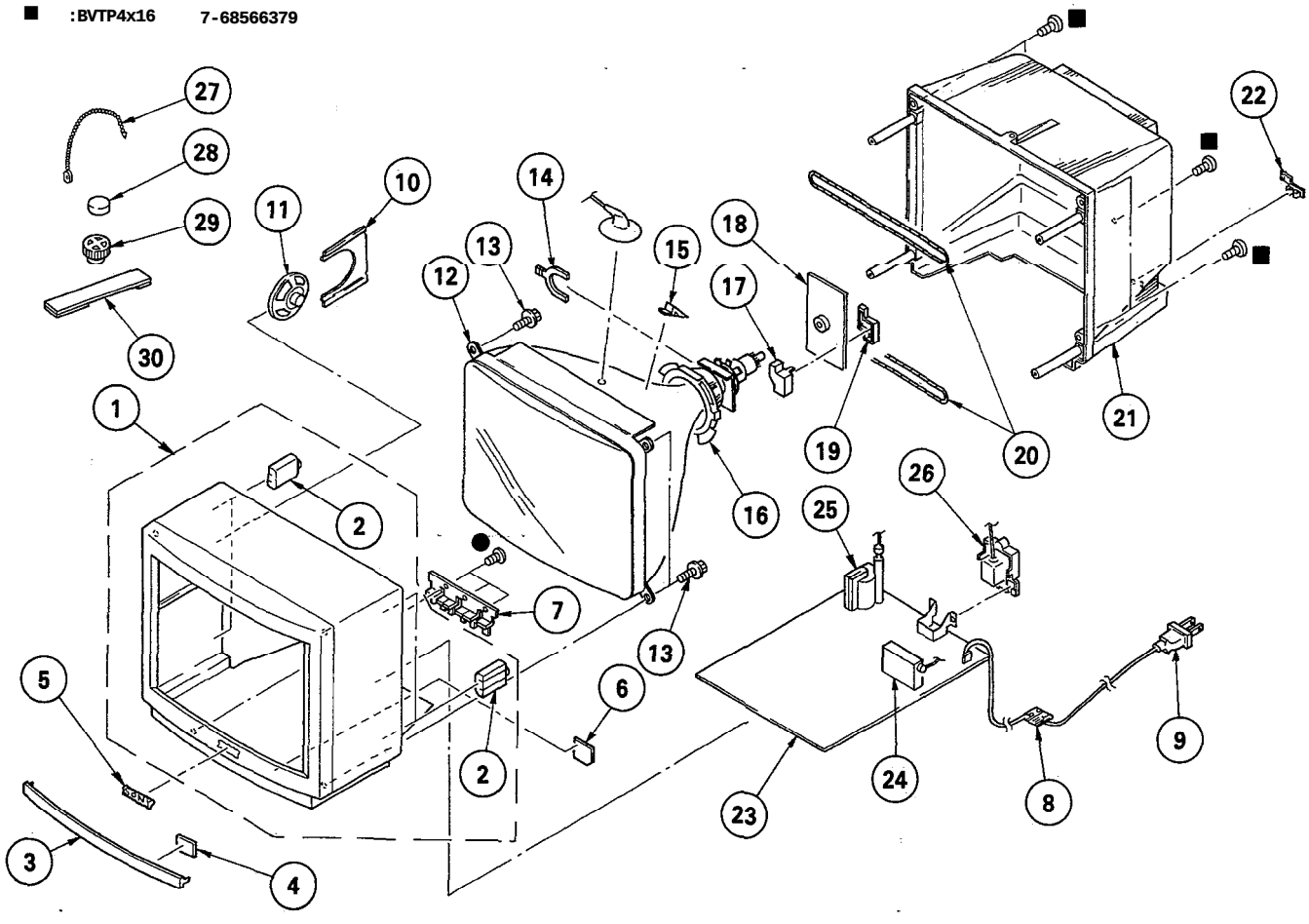
NOTE:
- Items with no part number and no description *are* not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by **shadingandmark** ⚠ *are critical* for safety.
Replace only with part number specified.

Les composants identifies par *une trame et une* **marque** ⚠ sontcritiques pourla securite
Ne les remplacerque par une piece portant le numero specifie

● :BVTP3x12 7-685-648-79

■ :BVTP4x16 7-68566379



REF.NO.	PART NO.	DESCRIPTION	REMARK
1	X-4030-231-1	CABINET SUB ASSY (WITH BEZEL SUB ASSY)	2
2	4-029-195-01	BOSS (A), ADHESIVE	
3	4-393-158-02	PANEL, ORNAMENTAL	
4	4-393-151-02	PLATE, LIGHT GUIDE	
5	4-393-157-01	EMBLEM (NO.6), SONY	
6	4-393-152-01	BARRIER	
7	4-393-156-01	BUTTON, MULTI	
8	⚠ 4-388-328-01	GROMMET, AC CORD	
9	⚠ 1-559-396-21	CORD, POWER	
10	*4-393-155-01	HOLDER, SPEAKER	
11	1-544-499-11	SPEAKER	
12	⚠ 8-735-555-75	PICTURE TUBE (A34JBU10X)	
13	4-365-808-01	SCREW (5), TAPPING	
14	I-452-277-00	MAGNET, BMC	
15	3-704-495-01	SPACER, DY	
16	⚠ 1-451-234-00	DEFLECTION YOKE (Y14NDA)	
""if"	*4-374-912-01	COVER (MAIN), CV VOL	
I			
18	*A-1331-045-A	C BOARD, COMPLETE	
19	*4-374-913-01	COVER (REAR LID), CV VOL	
20	⚠ 1-426-146-71	COIL, DEMAGNETIZATION	
21	4-393-160-01	COVER, REAR	
22	4-329-127-00	CLAMP, CORD	
23	*A-1296-663-A	A BOARD, COMPLETE	
24	⚠ 1-465-371-11	TUNER, ET (BTP-RA401)	
25	⚠ 1-439-483-11	TRANSFORMER ASSY, FLYBACK (NX-1710)	
26	⚠ I-537-273-11	TERMINAL ASSY, ANTENNA (USA ONLY)	
	⚠ 1-537-367-11	TERMINAL ASSY, ANTENNA (CND ONLY)	
27	4-308-870-00	CLIP, LEAD WIRE	
28	1-452-032-00	MAGNET, DISK; 10MM ϕ	
29	I-452-094-00	MAGNET, ROTATABLE DISK: 15MM ϕ	
I 30	X-4308-815-0	PERMALLOY ASSY. CONVERGENCE	

SECTION 8
ELECTRICAL PARTS LIST

A

NOTE:

The components identified by shading and mark ⚠ are critical for safety
Replace only with part number specified.

Les composants identifies par une trame etune marque ⚠ sont critiques pour la securite
Ne les remplacer que par une piece portant le numero specifie

Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

When indicating parts by reference number, please include the board name.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used

REF.NO.	PART NO.	DESCRIPTION			REMARK
	*A-1296-663-A	**A BOARD, COMPLETE**			
		**********			
	*1-508-766-00	**PIN, CONNECTOR** (5MM PITCH) **4P**			
	3-531-576-31	**RIVET (DIA. 3), NYLON**			
	*4-341-751-01	**EYELET**			
		<CONNECTOR>			
AI	I-506-348-99	**PIN. CONNECTOR 3P**			
A2	*1-508-786-00	**PIN, CONNECTOR (5MM PITCH) 2P**			
A3	*1-580-798-11	**CONNECTOR PIN** (DY) **6P**			
A4	*1-508-768-00	**PIN, CONNECTOR** (5MM **PITCH) 6P**			
A5	I-564-507-11	**PLUG, CONNECTOR 4P**			
A6	*1-564-509-11	**PLUG, CONNECTOR 6P**			
A7	*1-508-765-00	**PIN, CONNECTOR** (5MM **PITCH) 3P**			
		<CAPACITOR>			
C101	1-236-071-11	**ENCAPSULATED** COMPONENT			
C102	l-126-233-11	**ELECT** 22MF	20%	50V	
C103	1-102-125-00	**CERAMIC** 0.0047MF	10%	50V	
C104	I-236-058-21	**ENCAPSULATED** COMPONENT			
C105	l-102-976-00	**CERAMIC** 180PF	5%	50V	
C106	I-102-976-00	**CERAMIC** 180PF	5%	50V	
C107	1-102-108-00	**CERAMIC** 150PF	10%	50V	
C108	1-102-108-00	**CERAMIC** 150PF	10%	50V	
C109	I-124-927-11	**ELECT** 4.7MF	20%	50V	
C110	l-124-927-11	**ELECT** 4.7MF	20%	50V	
C115	I-102-074-00	**CERAMIC** 0.001MF	10%	50V	
C117	l-124-472-11	**ELECT** 470MF	20%	10V	
C118	l-136-153-00	**FILM** 0.01MF	5%	50v	
C119	1-101-888-00	**CERAMIC** 68PF	5%	50v	
Cl20	I-106-383-00	**MYLAR** 0.047MF		200V	
C121	l-124-477-11	**ELECT** 47MF	20%	16V	
Cl22	I-124-907-11	**ELECT** 10MF	20%	50V	
Cl26	I-124-902-00	**ELECT** 0.47MF	20%	50V	
Cl32	I-102-944-00	**CERAMIC** 7PF	1PF	50V	
Cl33	1-101-880-00	**CERAMIC** 47PF	5%	50V	
Cl35	l-102-074-00	**CERAMIC** 0.001MF	10%	50V	
Cl36	r-124-903-11	**ELECT** 1MF	20%	50V	
Cl37	l-124-903-11	**ELECT** 1MF	20%	50V	
Cl39	I-124-477-11	**ELECT** 47MF	20%	16V	
Cl40	l-102-121-00	**CERAMIC** 0.0022MF	10%	5ov	
C143	I-136-159-00	**FILM** 0.033MF	5%	50V	
Cl44	l-136-157-00	**FILM** 0.022MF	5%	50V	
Cl90	l-126-101-11	**ELECT** 100MF	20%	16V	
C201	l-126-101-11	**ELECT** 100MF	20%	16V	
C204	l-102-121-00	**CERAMIC** 0.0022MF	10%	50V	
C241	l-124-907-11	**ELECT** 10MF	20%	5ov	

REF.NO.	PART NO.	DESCRIPTION			REMARK
C247	l-124-360-00	**ELECT** 1000MF	20%	16V	
C249	1-102-112-00	**CERAMIC** 330PF	10%	50V	
C250	l-124-927-11	**ELECT** 4.7MF	20%	50V	
C251	I-162-117-00	**CERAMIC** 100PF	10%	500V	
C252	I-124-799-11	**ELECT** 2.2MF	20%	160V	
C254	1-124-799-11	**ELECT** 2.2MF	20%	160V	
C301	l-124-902-00	**ELECT** 0.47MF	20%	50V	
C302	I-102-961-00	**CERANIC** 27PF	5%	50V	
C303	1-126-101-11	**ELECT** 100MF	20%	16V	
C305	l-124-902-00	**ELECT** 0.47MF	20%	5ov	
C309	I-124-903-11	**ELECT** 1MF	20%	5ov	
C312	l-102-951-00	**CERAMIC** 15PF	5%	5ov	
C314	l-102-951-00	**CERANIC** 15PF	5%	50V	
C315	I-126-320-11	**ELECT** 10MF	20%	16V	
C316	I-102-953-00	**CERAMIC** 18PF	5%	5ov	
C321	I-102-129-00	**CERAMIC** 0.01MF	10%	50V	
C322	I-124-907-11	**ELECT** 10MF	20%	50V	
C400	l-126-101-11	**ELECT** 100MF	20%	16V	
C401	I-102-212-00	**CERAMIC** 820PF	10%	500V	
C402	1-124-479-11	**ELECT** 330MF	20%	25V	
C403	I-126-101-11	**ELECT** 100MF	20%	16V	
C405	l-124-477-11	**ELECT** 47MF	20%	16V	
C408	1-126-233-11	**ELECT** 22MF	20%	50V	
C410	I-124-903-11	**ELECT** 1MF	20%	50V	
C419	1-126-101-11	**ELECT** 100MF	20%	16V	
C420	1-102-106-00	**CERAMIC** 100PF	10%	5ov	
C421	I-102-934-00	**CERAMIC** 1PF	0.25PF	50V	
C422	l-124-903-11	**ELECT** 1MF	20%	50V	
C423	1-124-903-11	**ELECT** 1MF	20%	50V	
C424	l-124-903-11	**ELECT** 1MF	20%	50V	
C425	l-136-162-00	**FILM** 0.056MF	5%	50V	
C430	l-126-101-11	**ELECT** 100MF	20%	16V	
C431	1-124-907-11	**ELECT** 10MF	20%	50V	
C445	l-136-157-00	**FILM** 0.022MF	5%	50V	
C451	I-162-599-12	**CERAMIC** 0.0047MF	20%	400V	
C460	l-102-114-00	**CERAMIC** 470PF	10%	50V	
C501	1-126-101-11	**ELECT** 100MF	20%	16V	
C502	l-130-481-00	**MYLAR** 0.0068MF	5%	50V	
C503	l-124-903-11	**ELECT** 1MF	20%	50V	
C504	1-102-106-00	**CERAMIC** 100PF	10%	50V	
C505	I-130-481-00	**NYLAR** 0.0068MF	5%	50V	
C507	1-102-114-00	**CERAMIC** 470PF	10%	50V	
C508	1-101-006-00	**CERAMIC** 0.047MF		50V	
C509	1-101-006-00	**CERAMIC** 0.047MF		50V	
C510	l-130-481-00	**MYLAR** 0.0068MF	5%	50V	
C511	l-136-159-00	FILM 0.033MF	5%	50V	
C512	l-124-925-11	**ELECT** 2.2MF	20%	50V	
C513	l-124-903-11	**ELECT** 1MF	20%	50V	
C514	l-124-907-11	**ELECT** 10MF	20%	50V	
C515	l-124-464-11	**ELECT** 0.22MF	20%	50V	
C516	1-124-477-11	**ELECT** 47MF	20%	16V	

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REF.NO.	PART NO.	DESCRIPTION				REMARK
C517	I-126-233-11	ELECT	22MF	20%	50V	
C518	l-102-125-00	CERAMIC	0.0047MF	10%	50V	
C519	l-123-024-21	ELECT	33MF		160V	
C520	⚠1-162-115-51	CERAMIC	330PF	10%	2KV	
C521	l-106-369-00	MYLAR-	0.012MF	10%	100V	
C522	⚠1-136-965-11	FILM	0.0055MF	3%	2KV	
C523	1-124-799-11	ELECT	2.2MF	20%	160V	
C525	1-124-927-11	ELECT	4.7MF	20%	50V	
C526	⚠1-162-134-51	CERAMIC	470PF	10%	2KV	
C528	1-136-969-11	FILM	0.27MF	5%	200V	
C529	l-162-114-00	CERAMIC	0.0047MF		2KV	
C530	I-124-927-11	ELECT	4.7MF	20%	50V	
C531	1-124-122-11	ELECT	100MF	20%	50V	
C533	1-102-112-00	CERAMIC	330PF	10%	50V	
C534	1-162-117-00	CERAMIC	100PF	10%	500V	
C535	I-106-367-00	MYLAR	0.01MF	10%	200V	
C536	I-124-046-00	ELECT	10MF	20%	160V	
C537	⚠1-102-244-91	CERAMIC	220PF	10%	500V	
C538	⚠1-102-212-91	CERAMIC	820PF	10%	500V	
C539	I-124-122-11	ELECT	100MF	20%	50V	
C541	I-102-244-00	CERAMIC	220PF	10%	500V	
C542	1-106-371-00	MYLAR	0.015MF	10%	100V	
C543	I-124-122-11	ELECT	100MF	20%	50V	
C544	I-124-119-00	ELECT	330MF	20%	16V	
C545	l-124-119-00	ELECT	330MF	20%	16V	
C547	l-102-212-00	CERAMIC	820PF	10%	500V	
C548	1-102-212-00	CERAMIC	820PF	10%	500V	
C549	I-106-369-00	MYLAR	0.012MF		200V	
C551	l-102-212-00	CERAMIC	820PF	10%	500V	
C552	I-124-478-11	ELECT	100MF	20%	25V	
C555	l-136-165-00	FILM	0.1MF	5%	50V	
C557	l-124-925-11	ELECT	2.2MF	20%	50V	
C558	I-124-925-11	ELECT	2.2MF	20%	50V	
C561	I-124-925-11	ELECT	2.2MF	20%	50V	
C562	1-126-101-11	ELECT	100MF	20%	16V	
C570	1-124-903-11	ELECT	1MF	20%	50V	
C571	1-124-903-11	ELECT	1MF	20%	50V	
C572	1-124-903-11	ELECT	1MF	20%	50V	
C573	1-124-903-11	ELECT	1MF	20%	50V	
C601	⚠1-108-745-52	MYLAR	0.22MF	20%	125V	
C602	l-125-182-00	ELECT	330MF	20%	200V	
C603	1-161-830-00	CERAMIC	0.0047MF		500V	
C604	I-161-830-00	CERAMIC	0.0047MF		500V	
C605	I-123-948-00	ELECT	22MF	20%	250V	
C606	1-126-101-11	ELECT	100MF	20%	16V	
C607	I-124-472-11	ELECT	470MF	20%	10V	
C616	I-124-046-00	ELECT	10MF	20%	160V	
C617	I-124-046-00	ELECT	10MF	20%	160V	

<NETWORK>

CP102 I-236-300-11 NETWORK, C
CP103 I-236-490-11 NETWORK, RES, THICK FILM
CP104 1-236-301-11 NETWORK, C
CP105 I-236-301-11 NETWORK, C
CP107 I-236-730-11 NETWORK, C

CP108 1-236-479-11 NETWORK, C
CP109 1-236-524-11 NETWORK, C
CP117 l-236-078-11 NETWORK, RES, THICK FILM

<DIODE>

D101 8-719-123-25 DIODE RD33ES-L3
D103 1-808-919-11 LED UNIT (LEDU-9)

REF.NO.	PART NO.	DESCRIPTION	REMARK
D113	8-719-911-19	DIODE 1SS119	
D114	8-719-911-19	DIODE 1SS119	
D115	g-719-109-74	DIODE RD4.3ES-B	
D126	8-719-911-19	DIODE 1SS119	
D127	8-719-911-19	DIODE 1SS119	
D128	8-719-911-19	DIODE 1SS119	
D157	8-719-911-19	DIODE 1SS119	
D159	8-719-911-19	DIODE 1SS119	
D241	8-719-110-17	DIODE RD10ES-B2	
D245	8-719-110-33	DIODE RD12ES-B3	
D251	a-719-911-19	DIODE 1SS119	
D301	8-719-911-19	DIODE 1SS119	
D317	S-719-911-19	DIODE 1SS119	
D401	8-719-300-33	DIODE RU-3AM	
D402	8-719-911-19	DIODE 1SS119	
0403	8-719-911-19	DIODE 1SS119	
D405	8-719-110-33	DIODE RD12ES-B3	
0408	8-719-110-14	DIODE RD9.1ES-B3	
D501	8-719-911-55	DIODE U05G	
D502	8-719-109-89	DIODE RD5.6ES-B2	
D504	8-719-911-55	DIODE U05G	
D505	8-719-911-55	DIODE U05G	
D508	8-719-300-33	DIODE RU-3AM	
D511	⚠8-719-961-03	DIODE RGP10G	
D512	t-719-901-94	DIODE V19CS	
D513	8-719-976-64	DIODE RGP02-17	
D514	⚠8-719-961-03	DIODE RGP10G	
D561	E-719-911-19	DIODE 1SS119	
D601	⚠8-719-801-70	DIODE TVR4J	
D602	⚠8-719-801-70	DIODE TVR4J	
D603	⚠8-719-801-70	DIODE TVR4J	
D604	⚠8-719-801-70	DIODE TVR4J	
D605	8-719-120-53	DIODE RD5.1ES-L2	
D606	8-719-911-19	DIODE 1SS119	
D607	8-719-304-63	DIODE RM11C	
D608	B-719-304-63	DIODE RM11C	
D609	8-719-911-55	DIODE U05G	

<FUSE>

F601 ⚠ 1-532-748-11 FUSE, GLASS TUBE 6.3A/125V
1-533-223-11 CLIP, FUSE; F601
F602 ⚠1-532-741-11 FUSE, GLASS TUBE 1.25A/125V
I-533-223-11 CLIP, FUSE; F602

<IC>

IC101 8-759-636-45 IC M34302M8-514SP
ICI02 8-759-748-69 IC CAT59C11HP
IC103 8-749-922-13 IC KEY-C00SV-F
ICI04 8-759-104-05 IC UPD6325C
ICI05 8-759-924-12 IC LM7805CT

IC201 8-759-929-62 IC LM7812CT
IC301⚠8-752-031-72 IC CXA1013AS
IC401⚠8-719-951-28 ISOLATOR QCPL-3209
IC402⚠8-719-936-96 PHOTO COUPLER PC817-B
IC403 8-759-000-49 IC MC14066BCP

IC501 8-759-994-51 IC KA2131
IC601⚠8-749-921-10 IC STR-D3035
*4-341-752-01 EYELET; IC601

<IF BLOCK>

IF201 1-464-756-21 IF BLOCK (IFF-450A)

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REF.NO.	PART NO.	DESCRIPTION	REMARK
		<COIL>	
L101	I-410-476-11	INDUCTOR 33UH	
L104	1-410-476-11	INDUCTOR 33UH	
L105	l-410-504-11	INDUCTOR 3.9UH	
L106	I-408-404-00	INDUCTOR 3.9UH	
L203	1-408-408-00	INDUCTOR 8.2UH	
L301	1-408-411-00	INDUCTOR 15UH	
L302	I-408-418-00	INDUCTOR 56UH	
L402	I-410-476-11	INDUCTOR 33UH	
L501	I-422-613-11	COIL, AIR CORE	
L502	I-410-665-31	INDUCTOR 15UH	
L504	⚠ 1-424-320-11	COIL, CHOKE 33UH	
L506	I-460-046-11	COIL, HORIZONTAL LINEARITY	
L513	⚠ 1-410-669-41	INDUCTOR 33UH	
L515	I-412-045-11	INDUCTOR 2.2MH	
L520	⚠ 1-410-671-41	INDUCTOR 47UH	
L601	⚠ 1-410-413-21	INDUCTOR 3.3UH	
L602	⚠ 1-410-413-21	INDUCTOR 3.3UH	
		<TRANSISTOR>	
Q109	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q110	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q111	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q113	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q114	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q115	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q116	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q118	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q120	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q121	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q122	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q241	8-729-920-92	TRANSISTOR 2SD2096-BF	
Q250	8-729-924-83	TRANSISTOR 2SD1812-Q	
Q251	8-729-924-86	TRANSISTOR 2SB1212-P	
Q252	8-729-924-82	TRANSISTOR 2SD1812-P	
Q301	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q401	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q402	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q403	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q404	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q405	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q407	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q408	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q409	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q410	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q411	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q460	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q501	8-729-140-50	TRANSISTOR 2SC3209LK	
Q502	8-729-231-95	TRANSISTOR 2SD2089-LBSONY	
	*4-341-752-01	EYELET: Q502	
Q561	8-729-200-17	TRANSISTOR 2SA1091-O	
Q562	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q601	8-729-209-03	TRANSISTOR 2SC2551-RO	
		<RESISTOR>	
R001	I-249-421-11	CARBON 2.2K 5% 1/4W	
R002	I-249-413-11	CARBON 470 5% 1/4W	
R004	I-249-413-11	CARBON 470 5% 1/4W	
R005	I-249-413-11	CARBON 470 5% 1/4W	
R008	1-249-425-11	CARBON 4.7K 5% 1/4W	
R014	l-249-421-11	CARBON 2.2K 5% 1/4W	
R015	I-249-421-11	CARBON 2.2K 5% 1/4W	
R016	l-249-421-11	CARBON 2.2K 5% 1/4W	
R017	l-249-421-11	CARBON 2.2K 5% 1/4W	
R018	I-249-416-11	CARBON 820 5% 1/4W	
R019	I-249-429-11	CARBON 10K 5% 1/4W	
R020	1-249-429-l 1	CARBON 10K 5% 1/4W	
R021	1-249-434-11	CARBON 27K 5% 1/4W	
R026	l-249-421-11	CARBON 2.2K 5% 1/4W	
R027	1-249-421-11	CARBON 2.2K 5% 1/4W	
R028	a-249-421-11	CARBON 2.2K 5% 1/4W	
R029	l-249-405-11	CARBON 100 5% 1/4W	
R030	l-249-405-11	CARBON 100 5% 1/4W	
R034	I-249-429-11	CARBON 10K 5% 1/4W	
R035	l-249-417-11	CARBON 1K 5% 1/4W	
R036	1-249-417-11	CARBON 1K 5% 1/4W	
R037	1-249-417-11	CARBON 1K 5% 1/4W	
R040	1-249-431-11	CARBON 15K 5% 1/4W	
R044	I-249-413-11	CARBON 470 5% 1/4W	
R103	I-215-924-00	METAL OXIDE 15K 5% 3W	F
R113	I-249-417-11	CARBON 1K 5% 1/4W	
R117	I-249-417-11	CARBON 1K 5% 1/4W	
RI20	1-249-433-I l	CARBON 22K 5% 1/4W	
R122	1-249-433-11	CARBON 22K 5% 1/4W	
R123	1-249-433-11	CARBON 22K 5% 1/4W	
RI24	l-249-425-11	CARBON 4.7K 5% 1/4W	
R125	l-249-417-11	CARBON 1K 5% 1/4W	
R126	I-249-433-11	CARBON 22K 5% 1/4W	
RI27	l-249-429-11	CARBON 10K 5% 1/4W	
R128	I-249-411-11	CARBON 330 5% 1/4W	
R129	l-249-411-11	CARBON 330 5% 1/4W	
R136	l-249-417-11	CARBON 1K 5% 1/4W	
R139	l-249-417-11	CARBON 1K 5% 1/4W	
R140	I-249-417-11	CARBON 1K 5% 1/4W	
R142	I-249-429-11	CARBON 10K 5% 1/4W	
R143	I-249-429-11	CARBON 10K 5% 1/4W	
R146	l-249-417-11	CARBON 1K 5% 1/4W	
R148	I-249-425-11	CARBON 4.7K 5% 1/4W	
R149	l-249-429-1 I	CARBON 10K 5% 1/4W	
R150	1-249-437-11	CARBON 47K 5% 1/4W	
R151	I-249-429-11	CARBON 10K 5% 1/4W	
R152	l-249-437-11	CARBON 47K 5% 1/4W	
R153	l-249-429-11	CARBON 10K 5% 1/4W	
R154	l-247-895-00	CARBON 470K 5% 1/4W	
R155	I-249-439-11	CARBON 68K 5% 1/4W	
R156	1-249-429-11	CARBON 10K 5% 1/4W	
R158	l-247-895-00	CARBON 470K 5% 1/4W	
I		CARBON 68K 5% 1/4W	
R160	1-249-439-11 I-249-437-11	CARBON 47K 5% 1/4W	
R172	I-249-429-11	CARBON 10K 5% 1/4W	
R175	l-249-469-11	CARBON 100K 5% 1/4W	
R176	I-249-441-11	CARBON 100K 5% 1/4W	
R180	1-249-426-11	CARBON 5.6K 5% 1/4W	
R182	I-249-415-11	CARBON 680 5% 1/4W	
R185	1-249-429-11	CARBON 10K 5% 1/4W	
R186	I-249-425-11	CARBON 4.7K 5% 1/4W	
R187	I-249-413-11	CARBON 470 5% 1/4W	
R188	l-249-417-11	CARBON 1K 5% 1/4W	
R190	I-249-422-11	CARBON 2.7K 5% 1/4W	
R191	I-249-417-11	CARBON 1K 5% 1/4W	
R192	1-249-417-11	CARBON 1K 5% 1/4W	
R193	l-249-421-11	CARBON 2.2K 5% 1/4W	
R194	I-249-429-11	CARBON 10K 5% 1/4W	

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REF.NO.	PART NO.	DESCRIPTION				REMARK
R195	I-249-429-11	CARBON	10K	5%	1/4W	
R201	1-249-417-I 1	CARBON	1K	5%	1/4W	
R202	l-249-417-11	CARBON	1K	5%	1/4W	
R204	l-249-435-11	CARBON	33K	5%	1/4W	
R207	I-249-435-11	CARBON	33K	5%	1/4W	
R241	I-216-472-00	METAL OXIDE	39	5%	3W	F
R242	1-249-413-I 1	CARBON	470	5%	1/4W	
R243	1-249-429-11	CARBON	10K	5%	1/4W	
R245	l-249-407-1 1	CARBON	150	5%	1/4W	F
R250	l-249-417-11	CARBON	1K	5%	1/4W	
R251	1-249-417-11	CARBON	1K	5%	1/4W	
R252	I-247-881-00	CARBON	120K	5%	1/4W	
R253	1-249-492-11	CARBON	47K	5%	1/2W	
R255	I-216-426-11	METAL OXIDE	82	5%	1W	F
R301	I-21 5-472-00	METAL	130K	1%	1/4W	
R302	1-249-438-11	CARBON	56K	5%	1/4W	
R304	I-247-889-00	CARBON	270K	5%	1/4W	
R305	l-249-440-1 1	CARBON	82K	5%	1/4W	
R306	1-249-437-I 1	CARBON	47K	5%	1/4W	
R307	1-249-429-11	CARBON	10K	5%	1/4W	
R308	l-249-411-11	CARBON	330	5%	1/4W	
R309	l-249-411-11	CARBON	330	5%	1/4W	
R310	l-249-411-11	CARBON	330	5%	1/4W	
R311	1-249-417-11	CARBON	1K	5%	1/4W	
R312	1-249-429-I 1	CARBON	10K	5%	1/4W	
R315	l-249-417-11	CARBON	1K	5%	1/4W	
R316	1-249-417-11	CARBON	1K	5%	1/4W	
R317	l-249-417-1 1	CARBON	1K	5%	1/4W	
R318	l-249-417-11	CARBON	1K	5%	1/4W	
R319	I-249-417-11	CARBON	1K	5%	1/4W	
R320	l-249-417-11	CARBON	1K	5%	1/4W	
R323	1-249-427-11	CARBON	6.8K	5%	1/4W	
R324	l-249-415-11	CARBON	680	5%	1/4W	
R325	l-249-405-11	CARBON	100	5%	1/4W	
R326	I-249-405-11	CARBON	100	5%	1/4W	
R331	1-249-424-I 1	CARBON	3.9K	5%	1/4W	
R341	I-249-417-11	CARBON	1K	5%	1/4W	
R342	l-249-421-11	CARBON	2.2K	5%	1/4W	
R366	l-249-430-11	CARBON	12K	5%	1/4W	
Fi367	1-249-436-I 1	CARBON	39K	5%	1/4W	
R401	l-249-405-11	CARBON	100	5%	1/4W	
R402	I-249-412-11	CARBON	390	5%	1/4W	F
R403	1-249-441-I 1	CARBON	100K	5%	1/4W	
R404	1-249-441-I 1	CARBON	100K	5%	1/4W	
R405	l-249-404-00	CARBON	82	5%	1/4W	
R406	l-249-419-11	CARBON	1.5K	5%	1/4W	
R407	l-249-405-11	CARBON	100	5%	1/4W	
R409	I-249-425-11	CARBON	4.7K	5%	1/4W	
R410	l-249-407-11	CARBON	150	5%	1/4W	
R411	1-216-428-00	METAL OXIDE	180	5%	1W	F
R413	1-249-432-I 1	CARBON	18K	5%	1/4W	
R414	I-249-429-11	CARBON	10K	5%	1/4W	
R415	l-249-417-11	CARBON	1K	5%	1/4W	
R416	1-247-883-00	CARBON	150K	5%	1/4W	
R417	l-247-883-00	CARBON	150K	5%	1/4W	
R418	l-249-417-11	CARBON	1K	5%	1/4W	
A419	1-249-421-11	CARBON	2.2K	5%	1/4W	
R420	1-249-433-11	CARBON	22K	5%	1/4W	
R421	I-249-406-11	CARBON	120	5%	1/4W	
R422	l-249-419-11	CARBON	1.5K	5%	1/4W	
R423	l-249-405-11	CARBON	100	5%	1/4W	
R424	I-249-417-11	CARBON	1K	5%	1/4W	
R425	l-249-409-11	CARBON	220	5%	1/4W	
R426	1-249-433-11	CARBON	22K	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R427	l-247-883-00	CARBON	150K	5%	1/4W	
R428	l-249-435-11	CARBON	33K	5%	1/4W	
R429	1-249-421-11	CARBON	2.2K	5%	1/4W	
R431	I-249-421-11	CARBON	2.2K	5%	1/4W	
R432	l-249-420-11	CARBON	1.8K	5%	1/4W	
R433	I-247-887-00	CARBON	220K	5%	1/4W	
R434	I-249-415-11	CARBON	680	5%	1/4W	
R435	l-202-730-00	SOLID	8.2M	10%	1/2W	
R436	1-249-423-11	CARBON	3.3K	5%	1/4W	
R437	1-249-429-11	CARBON	10K	5%	1/4W	
R438	I-249-417-11	CARBON	1K	5%	1/4W	
R439	1-249-429-11	CARBON	10K	5%	1/4W	
R440	I-249-417-11	CARBON	1K	5%	1/4W	
R441	1-249-421-11	CARBON	2.2K	5%	1/4W	
R445	I-249-423-11	CARBON	3.3K	5%	1/4W	
R448	l-249-421-11	CARBON	2.2K	5%	1/4W	
R451	l-202-727-00	SOLID	4.7M	10%	1/2W	
R460	l-249-417-11	CARBON	1K	5%	1/4W	
R461	l-249-419-11	CARBON	1.5K	5%	1/4W	
R501	l-215-920-11	METAL OXIDE	3.3K	5%	3W	F
R502	l-216-484-00	METAL OXIDE	3.9K	5%	3W	F
R503	l-249-405-11	CARBON	100	5%	1/4W	
R504	I-249-414-11	CARBON	560	5%	1/4W	
R505	l-215-472-00	METAL	130K	1%	1/4W	
R506	I-249-405-11	CARBON	100	5%	1/4W	
R507	l-249-431-11	CARBON	15K	5%	1/4W	
R508	1-249-433-11	CARBON	22K	53	1/4W	
R509	l-249-434-11	CARBON	27K	5%	1/4W	
R510	1-249-422-11	CARBON	2.7K	5%	1/4W	
R512	I-249-411-11	CARBON	310	5%	1/4W	
R513	l-215-472-00	METAL	130K	1%	1/4W	
R514	l-215-457-00	METAL	33K	1%	1/4W	
R515	l-249-427-11	CARBON	6.8K	5%	1/4W	
R516	I-249-428-11	CARBON	8.2K	5%	1/4W	
R517	I-249-417-11	CARBON	1K	5%	1/4W	
R518	1-249-425-I 1	CARBON	4.7K	5%	1/4W	F
R519	l-249-405-11	CARBON	100	5%	1/4W	
R520	I-247-903-00	CARBON	1M	5%	1/4W	
R521	l-249-449-11	CARBON	1.5	5%	1/4W	F
R522	l-215-445-00	METAL	10K	1%	1/4W	
R523	1-249-425-I 1	CARBON	4.7K	5%	1/4W	F
R524	l-216-353-00	METAL OXIDE	2.2	5%	1W	F
R525 ⚠	1-21 5-922-51	METAL OXIDE	6.8K	5%	3W	F
R526	I-249-437-11	CARBON	47K	5%	1/4W	
R527	l-249-431-11	CARBON	15K	5%	1/4W	
R529	l-249-423-11	CARBON	3.3K	5%	1/4W	F
R530	l-214-917-00	METAL	150K	1%	1/2W	
R531	l-247-887-00	CARBON	220K	5%	1/4W	
R532	1-249-438-I 1	CARBON	56K	5%	1/4W	
R534	1-216-454-11	METAL OXIDE	390	5%	2W	F
R535	l-216-452-11	METAL OXIDE	180	5%	2W	F
R536	l-216-452-11	METAL OXIDE	180	5%	2W	F
R537	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R538	I-216-427-00	METAL OXIDE	120	5%	1W	F
R539	l-247-706-11	CARBON	330	5%	1/4W	
R540	l-249-429-11	CARBON	10K	5%	1/4W	
R541	1-249-434-11	CARBON	27K	5%	1/4W	
R542	1-249-431-11	CARBON	15K	5%	1/4W	
R543	l-216-354-11	METAL OXIDE	2.7	5%	1W	F
R544	1-249-416-11	CARBON	820	5%	1/4W	
R545	1-249-425-11	CARBON	4.7K	5%	1/4W	
R547	l-249-413-11	CARBON	470	5%	1/4W	F
R548	I-247-696-11	CARBON	47	5%	1/4W	F

The components identified by shading and mark ⚠ are critical for safety
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite
Ne les remplacer que par une piece portant le numero specifie

• The components identified by ❑ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation Should replacement be required, replace only with the value originally used

REF.NO.	PART NO.	DESCRIPTION				REMARK
R549	⚠ 1-215-881-51	METAL OXIDE	15	5%	2W	F
R554	I-249-431-11	CARBON	15K	5%	1/4W	
R555	1-249-495-11	CARBON	82K	5%	1/2W	
R556	l-249-411-11	CARBON	330	5%	1/4W	
R557	l-249-418-11	CARBON	1.2K	5%	1/4W	
R558	I-249-423-11	CARBON	3.3K	5%	1/4W	
R560	l-249-411-11	CARBON	330	5%	1/4W	
R561	l-216-390-11	METAL OXIDE	1.2	5%	3W	F
R562	r-249-417-11	CARBON	1K	5%	1/4W	F
R563	l-247-885-00	CARBON	180K	5%	1/4W	
R564	I-249-441-11	CARBON	100K	5%	1/4W	
R565	1-249-429-11	CARBON	10K	5%	1/4W	
R566	l-249-425-11	CARBON	4.7K	5%	1/4W	
R567	I-215-430-00	METAL	2.4K	1%	1/4W	
❑R568	⚠	METAL			1/4W	
R569	I-247-883-00	CARBON	150K	5%	1/4W	
R570	1-249-443-11	CARBON	0.47	5%	1/4W	F
R571	1-216-377-11	METAL OXIDE	4.7	5%	2W	F
R601	⚠ 1-202-719-91	SOLID	1M	10%	1/2W	
R602	⚠ 1-205-707-12	WIREWOUND	2.2	5%	10W	F
R603	I-249-496-11	CARBON	100K	5%	1/2W	
R606	I-249-413-11	CARBON	470	5%	1/4W	
R609	I-207-474-00	WIREWOUND	8.2	10%	1/2W	
R610	⚠ 1-205-907-11	WIREWOUND	200	5%	20W	F
R611	I-215-872-11	METAL OXIDE	3.3K	5%	1W	F
R612	l-215-921-11	METAL OXIDE	4.7K	5%	3W	F
R613	I-215-921-11	METAL OXIDE	4.7K	5%	3W	F
R615	⚠ 1-216-463-51	METAL OXIDE	12K	5%	2W	F
R616	l-249-423-11	CARBON	3.3K	5%	1/4W	F
R617	l-249-401-11	CARBON	47	5%	1/4W	F
R618	I-247-895-00	CARBON	470K	5%	1/4W	

(VARIABLE RESISTOR>

RV101	I-238-015-11	RES, ADJ, CARBON	4.7K			
RV302	l-238-016-11	RES, ADJ, CARBON	10K			
RV303	l-238-019-11	RES, ADJ, CARBON	47K			
RV401	I-238-012-11	RES, ADJ, CARBON	IK			
RV402	1-238-012-11	RES, ADJ, CARBON	1K			
RV501	I-228-728-00	RES, ADJ, CERAMIC CARBON	100K			
RV502	1-238-020-11	RES, ADJ, CARBON	100K			
RV503	l-238-014-11	RES, ADJ, CARBON	3.3K			

<RELAY>

RY601	⚠ 1-515-573-13	RELAY, POWER	

<SWITCH>

S101	⚠ 1-571-532-23	SWITCH, TACTIL (POWER)	
S102	I-571-532-21	SWITCH, TACTIL	
S103	l-571-532-21	SWITCH, TACTIL	
S104	1-571-532-21	SWITCH, TACTIL	
S105	I-571-532-21	SWITCH, TACTIL	
S106	1-571-532-21	SWITCH, TACTIL	
S501	I-554-186-00	SWITCH, LEVER	

<TRANSFORMER>

T251	⚠ 1-427-479-11	TRANSFORMER (SOT)
T401	⚠ 1-421-857-11	TRANSFORMER, FERRITE
T501	⚠ 1-437-195-13	TRANSFORMER, HORIZONTAL DRIVE
T503	⚠ 1-439-483-11	TRANSFORMER ASSY, FLYBACK (NX-1710)
	*4-341-752-01	BYBLET; T503

EF.NO.	PART NO.	DESCRIPTION	REMARK
T601	⚠ 1-421-935-21	L.F.T	

<THERMISTOR>

THP601	⚠ 1-800-686-33	THERMISTOR (POSITIVE)	

<TUNER>

TU101	⚠ 1-465-371-11	TUNER, ET (BTP-RA401) (USA ONLY)	

<CRYSTAL>

X101	l-577-082-11	VIBRATOR, CERAMIC	
X301	l-567-505-11	OSCILLATOR, CRYSTAL	

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	*A-1331-045-A	C BOARD, COMPLETE
		**********
	*4-374-912-01	COVER (MAIN), CV VOL
	*4-374-913-01	COVER (REAR LID), CV VOL

<CONNECTOR>

C1	*I-506-371-00	PIN, CONNECTOR 2P
C2	*1-508-786-00	PIN, CONNECTOR(5MM PITCH) 2P
C3	*1-564-509-11	PLUG, CONNECTOR 6P
C4	*1-508-765-00	PIN, CONNECTOR(5MM PITCH) 3P

<CAPACITOR>

C702	1-101-880-00	CERAMIC	47PF	5%	50V
C703	l-101-880-00	CERANIC	47PF	5%	50V
C704	1-101-880-00	CERANIC	47PF	5%	50V
C705	l-162-116-00	CERAMIC	680PF	10%	2KV
C706	l-136-601-11	FILM	0.01MF	10%	630V

<JACK>

J701	I-526-819-11	SOCKET, PICTURE TUBE	

<COIL>

L701	l-410-520-11	INDUCTOR	82UH
L702	l-410-520-11	INDUCTOR	82UH
L703	l-410-520-11	INDUCTOR	82UH
L704	l-408-424-00	INDUCTOR	180UH

<TRANSISTOR>

Q701	8-729-906-39	TRANSISTOR	2SC3271-P
Q702	8-729-906-39	TRANSISTOR	2SC3271-P
Q703	a-729-906-39	TRANSISTOR	2SC3271-P

<RESISTOR>

R701	l-249-421-11	CARBON	2.2K	5%	1/4W	
R703	1-249-412-11	CARBON	390	5%	1/4W	
R704	1-249-422-11	CARBON	2.7K	5%	1/4W	
R705	l-202-824-00	SOLID	3.3K	10%	1/2W	
R706	l-215-899-11	METAL OXIDE	15K	5%	2W	F
R707	l-249-418-11	CARBON	1.2K	5%	1/4W	
R708	l-249-413-11	CARBON	470	5%	1/4W	

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The components identified by shading and mark ⚠ are critical for safety
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REF.NO.	PART NO.	DESCRIPTION				REMARK
R709	1-249-415-11	CARBON	680	5%	1/4W	
R710	I-249-422-11	CARBON	2.7K	5%	1/4W	
R711	I-202-824-00	SOLID	3.3K	10%	1/2W	
R712	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R713	I-249-418-11	CARBON	1.2K	5%	1/4W	
R714	I-249-413-11	CARBON	470	5%	1/4W	
R715	I-249-415-11	CARBON	680	5%	1/4W	
R716	I-249-422-11	CARBON	2.7K	5%	1/4W	
R717	1-202-824-00	SOLID	3.3K	10%	1/2W	
R718	I-215-899-11	METAL OXIDE	15K	5%	2W	F
R719	I-202-842-11	SOLID	220K	10%	1/2W	
R720	1-202-719-00	SOLID	1M	10%	1/2W	
R721	1-216-349-00	METAL OXIDE	1	5%	1W	F
R722	1-202-848-00	SOLID	680K	10%	1/2W	
R723	1-202-838-00	SOLID	100K	10%	1/2W	

<VARIABLE RESISTOR>

RV701	I-228-723-00	RES, ADJ, CERAMIC	CARBON	4.7K		
RV702	1-228-722-00	RES, ADJ, CERAMIC	CARBON	3.3K		
RV703	1-228-723-00	RES, ADJ, CERAMIC	CARBON	4.7K		
RV704	I-228-722-00	RES, ADJ, CERAMIC	CARBON	3.3K		
RV705	I-228-723-00	RES, ADJ, CERAMIC	CARBON	4.7K		
RV706	1-230-641-11	RES, ADJ, METAL GLAZE		2.2M		
RV707	1-230-641-11	RES, ADJ, METAL GLAZE		2.2M		
RV708	⚠ 1-230-619-11	RES, ADJ, METAL GLAZE		110M		
RV709	I-228-725-00	RES, ADJ, CERAMIC	CARBON	22K		

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MISCELLANEOUS
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	1-452-032-00	MAGNET, DISK; 10MM ϕ
	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ϕ
	1-452-277-00	MAGNET, BMC
	⚠ 1-537-273-11	TERMINAL ASSY, ANTENNA (USA ONLY)
	⚠ 1-537-367-11	TERMINAL ASSY, ANTENNA (CND ONLY)
	⚠ 1-559-396-21	CORD, POWER
L901	⚠ 1-426-146-71	COIL, DEMAGNETIZATION
L904	⚠ 1-451-234-00	DEFLECTION YOKE (Y14NDA)
SP901	1-544-499-11	SPEAKER
V901	⚠ 8-735-555-75	PICTURE TUBE (A34JBU10X)

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ACCESSORIES AND PACKING MATERIALS
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PART NO.	DESCRIPTION	REMARK
1-417-182-I	1 CONVERTER (EAC-25) (CND ONLY)	
I-501-372-41	ANTENNA, TELESCOPIC	
1-562-443-11	CONNECTOR, ANTENNA (USA ONLY)	
3-751-225-21	MANUAL, INSTRUCTION	
3-751-225-31	MANUAL, INSTRUCTION (CND ONLY)	
*4-337-201-02	BAG, PROTECTION	
x4-393-161-01	CUSHION (UPPER) (ASSY)	
*4-393-162-01	CUSHION (LOWER) (ASSY)	
*4-393-167-01	INDIVIDUAL CARTON	

REMOTE COMMANDER

A-1470-921-A	REMOTE COMMANDER (RM-781)	
4-394-031-01	COVER, BATTERY (FOR RM-781)	